MEASURING AND ANALYSING CUSTOMER SATISFACTION

A case study at Nibag B.V.

L.B.M. BOVENMARS

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Contact details student

Name: Leon Bovenmars

E-mail: l.b.m.bovenmars@student.utwente.nl

Nibag B.V.

Contact details company

Name: Nibag B.V.

Address: Gerard Hollinkstraat 1

ZIP code: 7575 BB Oldenzaal

Telephone: 0541-585858

Contact details external supervisor

Name: Elmar Heupers MSc

E-mail: e.heupers@nibag.nl

University of Twente

Contact details University

Name: University of Twente

Address: Drienerlolaan 5

ZIP code: 7522 NB, Enschede-Noord

Telephone: 053-489 9111

Contact details first internal supervisor

Name: Dr. Ir. Hans Moonen

E-mail: hans.moonen@utwente.nl

Contact details second internal supervisor

Name: Dr. Pascal van Eck

E-mail: p.vaneck@utwente.nl

Preface

This report is the result of my graduation research which was conducted in order to finish my study Business Information Technology at the School of Management and Governance faculty of the University of Twente.

In the beginning of May 2012 I asked Hans Moonen, teacher of the BIT BV course, if he knew an interesting organization where I could do my graduation project. Via his contacts in the BIT BV course he introduced Nibag to me. This had led to this master thesis on which I have worked with great pleasure.

I started on the 4th of June 2012 with my thesis and to this day I have been supported by many people while conducting this research and writing my thesis.

In the first place I want to thank my girlfriend Inge Braamhaar, who supported me during the ups and downs of this research and my study in general. I also want to thank my family who always supported me during my study at the University of Twente. This research was supervised by Dr. Ir. Hans Moonen and Dr. Pascal van Eck from the University of Twente and Elmar Heupers MSc and Wim Endeman from Nibag B.V. I want to thank them for their time and advice during this research. Next to that I want to thank my colleagues from Nibag Oldenzaal and Uden for their input and cosiness during my graduation project. Finally I want to thank the customers of Nibag which filled out the customer satisfaction survey.

Leon Bovenmars

Oldenzaal, February 2013

Management Summary

This research was conducted based on the desire of Nibag B.V. to improve their business by providing high quality services. Providing high quality services will increase the satisfaction level of customers, which is a key success factor for every profit oriented organization (Dimistrades, 2006). Organizations should implement the ISO 9001:2008 standard in order to satisfy their customers (ISO_9000). In September 2010 Nibag became ISO 9001:2008 certified. In order to keep this certificate Nibag has to continuously improve their quality management system. One process of the ISO 9001:2008 standard is the 'measurement, analysis and improvement of customer satisfaction'. Based on the desire of Nibag this research was conducted on the measurement of customer satisfaction. By measuring customer satisfaction Nibag knows how they perform and, based on this information, is able to improve their service quality and therefore preserve the ISO certification.

In this research an instrument was designed, and applied in practice, which measures the customer satisfaction of organizations which provide professional services on housing management. First customer satisfaction factors which should be measured for companies such as Nibag were identified. In current literature there is no framework which addresses these factors, so therefore a systematic literature review was conducted. Eventually 27 articles were selected which addressed 27 different customer satisfaction factors. These factors were grouped together into 10 factors based on their definitions. By conducting workshops with employees of Nibag and interviews with customers of Nibag, the factors from literature were reviewed on relevancy and ranked on importance. This review and ranking indicated whether or not factors were applicable in a practical context. Based on the importance ranking five factors were selected for customer satisfaction measurement (reliability, competencies, communication, price and project management). These factors were operationalized using existing measurement instruments and definitions from literature. The instrument was validated by an expert group which was representative for the customers of Nibag. In current literature there did not exist an instrument design approach for organizations which provide professional services on housing management. The data was collected using a web-based survey. The data was analysed using a self-made tool which was based on the importance-performance analysis. This tool provided a clear and quick overview for management of Nibag on factors were resources should be invested in and on factors were resources should not be investing in.

Next to the theoretical contribution, this research also contributes to practice. First it clearly describes the developed instrument. Other companies, which operate in the same context of Nibag, can use this instrument to measure their customer satisfaction. Second the approach to design the measurement instrument was clearly described. Companies in all sorts of branches can follow this approach and create their own customer satisfaction measurement instrument. Third the developed analysis tool was clearly described. Other companies can use or adapt the tool to their own measurement instrument.

The research process in this master thesis led to the conclusion that the designed instrument and developed analysis tool were applicable for Nibag to measure and analyse their customer satisfaction. Customers of Nibag were generally satisfied with Nibag and their services provided (score –*Confidential*– on a 5-point scale). The conclusions have led to the following recommendations for Nibag:

- *–Confidential–*
- *–Confidential–*
- *–Confidential–*
- *–Confidential–*
- Customer satisfaction should frequently being measured and analysed using the designed instrument and the developed tool. Using the designed instrument enables Nibag to measure customer satisfaction at different moments in time. The performance progress can easily be derived, because the same format is used. Because of the same format, comparisons of results can easily be conducted.

Concerning the management of Nibag B.V. the recommendations have the following consequences:

- *–Confidential–*
- *–Confidential–*

This research describes the design and application of an instrument and analysis tool for the measurement and analysis of customer satisfaction in small to medium sized enterprises which provide professional services in housing management. Management of Nibag is able to use the instrument for measuring and, based on the analysis, improving their customer satisfaction.

Management Samenvatting

Dit onderzoek is uitgevoerd naar aanleiding van de wens van Nibag B.V. om hun business te verbeteren door diensten van hoge kwaliteit te leveren. Het leveren van diensten van hoge kwaliteit heeft als gevolg dat de klanttevredenheid toeneemt. Dit is een succesfactor voor elke winstgeoriënteerde organisatie (Dimistrades, 2006). Organisaties moeten het ISO 9001:2008 standaard implementeren om zo hun klanten tevreden te stellen (ISO_9000). In september 2010 werd Nibag ISO 9001:2008 gecertificeerd. Om ervoor te zorgen dat Nibag dit certificaat behoudt, dient zij voortdurend haar kwaliteitsmanagementsysteem te verbeteren. Het 'Meten, analyseren en verbeteren van klanttevredenheid' proces is één van de ISO 9001:2008 onderdelen. Gebaseerd op de wens van Nibag heeft dit onderzoek zich gefocust op het meten van klanttevredenheid. Door het meten van klanttevredenheid weet Nibag hoe zij presteert en kan zij, gebaseerd op deze informatie, de kwaliteit van diensten verbeteren en daardoor de ISO certificering behouden.

In dit onderzoek is een instrument ontworpen, en toegepast in de praktijk, welke de klanttevredenheid meet van organisaties die professionele diensten leveren op het gebied van huisvesting. Allereerst zijn klanttevredenheid factoren geïdentificeerd welke gemeten moeten worden voor organisaties zoals Nibag. In de huidige literatuur bestaat er geen raamwerk die deze factoren benoemd, daarom is er een systematische literatuur review uitgevoerd. Uiteindelijk zijn er 27 artikelen geselecteerd waarin 27 verschillende factoren waren geïdentificeerd. Op basis van definities zijn de factoren gegroepeerd in tien verschillende factoren. In workshops met medewerkers van Nibag en interviews met klanten van Nibag zijn de factoren beoordeeld op relevantie en gerankt op belangrijkheid. Deze beoordeling en ranking gaven aan in hoeverre de factoren bruikbaar waren in de praktijk. Op basis van de belangrijkheid ranking zijn vijf factoren (betrouwbaarheid, competenties, communicatie, prijs en projectmanagement) geselecteerd voor het meten van klanttevredenheid. Bestaande meetinstrumenten en definities uit de literatuur zijn gebruikt voor het operationaliseren van deze factoren. Het instrument is gevalideerd door een expertgroep welke representatief was voor de klanten van Nibag. In de huidige literatuur bestaat er geen aanpak voor het ontwerpen van een instrument voor organisaties die professionele diensten leveren op het gebied van huisvesting. De data was verzameld door het gebruik te maken van een web-based applicatie. Een zelf ontwikkelde tool, gebaseerd op de belangrijkheid-prestatie analyse, is gebruikt voor de analyse van de data. De tool gaf, aan management van Nibag, een snel en duidelijk overzicht van factoren waar middelen in geïnvesteerd moesten worden en in welke factoren niet.

Naast de bijdrage aan theorie heeft dit onderzoek ook bijgedragen aan de praktijk. Allereerst wordt het ontwikkelde instrument duidelijk beschreven. Andere bedrijven, die zich bevinden in dezelfde sector als Nibag, kunnen het instrument gebruiken om hun klanttevredenheid te meten. Als tweede is de aanpak om het meetinstrument te ontwerpen duidelijk beschreven. Bedrijven uit verschillende branches kunnen deze aanpak hanteren om hun eigen klanttevredenheid te meten. Als derde is de analyse tool duidelijk beschreven. Andere bedrijven kunnen deze tool gebruiken of aanpassen aan hun eigen meetinstrument.

Het onderzoeksproces in deze master thesis heeft geleid tot de conclusie dat het ontworpen instrument en het ontwikkelde analyse tool bruikbaar voor Nibag is om hun klanttevredenheid te meten en analyseren. De klanten van Nibag waren over het algemeen tevreden met Nibag en de diensten die zij leveren (een score van *–Confidential–* op een schaal van 5). The conclusies van dit onderzoek hebben geleid tot de volgende aanbevelingen voor Nibag:

- *–Confidential–*
- *–Confidential–*
- *–Confidential–*
- *–Confidential–*
- Klanttevredenheid zou regelmatig gemeten en geanalyseerd moeten worden gebruikmakend van het ontworpen instrument en ontwikkelde tool. Door het ontworpen instrument te gebruiken is Nibag in staat om op verschillende momenten klanttevredenheid te meten. De voortgang van de prestaties van Nibag kan gemakkelijk herleid worden omdat telkens hetzelfde format gebruikt wordt. Ook kunnen vergelijkingen gemakkelijk worden uitgevoerd door het gebruik van hetzelfde format.

De aanbevelingen hebben de volgende consequenties voor het management van Nibag:

- *–Confidential–*
- *–Confidential–*

Dit onderzoek beschrijft het ontwerp en toepassing van een instrument en analyse tool voor het meten en analyseren van klanttevredenheid in midden- en kleinbedrijven welke professionele diensten leveren op gebied van huisvesting. Het management van Nibag heeft de mogelijkheid om het instrument te gebruiken voor het meten en, gebaseerd op de analyse, verbeteren van de klanttevredenheid.

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1 Introduction

This chapter introduces the research which is conducted at Nibag B.V. First the research setting and problem investigation will be described in respectively section 1.1 and 1.2. Next the research questions will be addressed in section 1.3. Section 1.4 will provide the research model used in this research. The scope of this research is briefly described in section 1.5. The practical and theoretical relevance of this research are mentioned in respectively sections 1.6 and 1.7. This introduction will end with the remaining structure of this thesis, which is provided in section 1.8.

1.1 Research setting

This section provides information about the setting in which this research was conducted. This research was conducted at Nibag B.V. Oldenzaal (Nationaal Instituut Begeleiding en Advisering Geluidsisolatie). In 1984 Nibag B.V. started as a service provider for housing associations. Nibag B.V. (from now on called 'Nibag' in this thesis) supported corporations in applying sound resistant features on houses which were located near (military) airports. Soon Nibag developed itself into an all-round agency providing a broad offer of services concerning housing management. Nibag has clients which are both commercial and non-commercial. Nibag helps organizations in creating and maintaining suitable housing management. Nibag focuses on a quick, durable and worthy end result. Nibag has two locations: Uden and Oldenzaal. Together, both offices serve clients throughout the Netherlands (Endeman, 2011).

The vision of Nibag is defined as:

Nibag, with their specialists, wants to fulfil an important role in the development, deployment and management of social and commercial real estate. This requires a multidisciplinary approach in which durability and cost efficiency play an important role (Endeman, 2011).

The mission statement of Nibag is defined as:

The advisors of Nibag assist organizations, which own social and commercial real estate, with the initiation, realization, organization and management of their real estate portfolio. The advisors of Nibag work in a proactive way and want to cooperate, based preferably on partnership, with clients, suppliers and other professional parties (Endeman, 2011).

A few years ago Nibag has undergone a complete restructuring process. Nibag was organized in a different way and had to rebuild some of their businesses. This restructuring process is relevant for this research, because it could have influence on the satisfaction level of customers. Customers could be, for example, more satisfied after the restructuring process than before this process. In Figure 1 the current organizational structure of Nibag B.V. can be found. Nibag consists of several departments. These departments are:

- Geluid (Sound),
- Monumentenzorg en herbestemming (Monuments care and redevelopment),
- MJOP - Meerjaren onderhoudsplanning (multiannual maintenance planning),
- BPM - Bouwproject management (Building Project Management),
- Veiligheid (Safety),
- Energie (Energy) and
- Ontwerp advies (Design advice).

These departments are situated in different markets. The most important markets are Healthcare, Education, Municipality, Childcare, Corporations, Government and others. The departments are headed by management. Management is supported by different staff departments: Human Resource Management, Finance, Quality, ICT and Marketing/PR (Endeman, 2011).

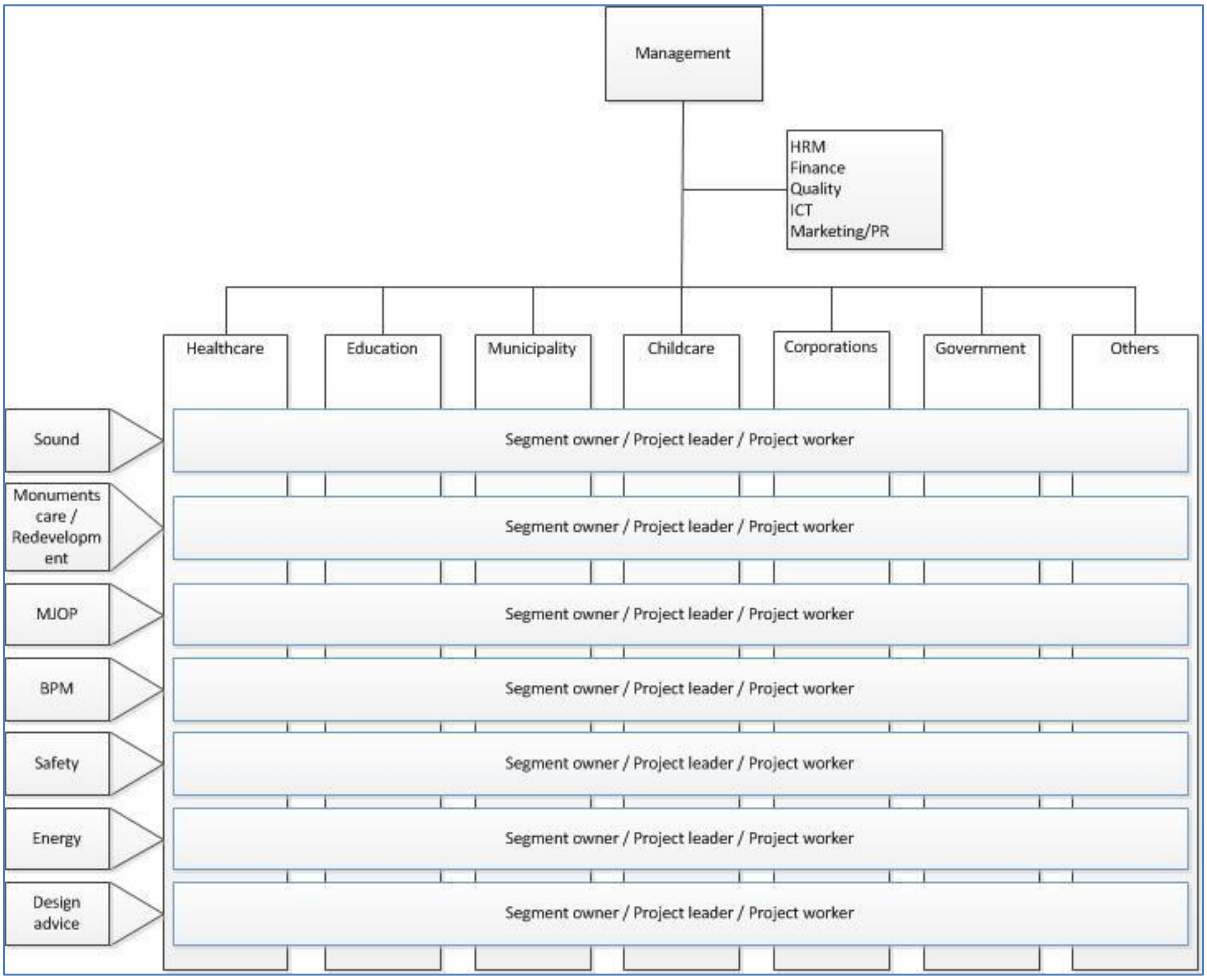

Figure 1: Organizational structure of Nibag B.V.

As already mentioned in the beginning of this section, Nibag provides services (on housing management) to their customers. It is important, for this research, to recognize that Nibag offers services instead of products to their customers. How these two are related is described in the next section.

1.1.1 Product vs. Service

Nibag provides professional services from their different departments which can be found in Figure 1. Shostack (1977), amongst others, investigated the product-service relationship. She distinguishes products and services based on tangibility. Shostack (1977) provides a continuum of market entities according to the weight of the mix of elements that comprise them. An example is the airline market. Tangible elements of the airline market are the vehicle and food & drinks. Intangible elements are service frequency, transport, pre- & post flight service and in flight service. So when a market is dominant on intangible elements and therefore is less dominant on tangible elements it will be situated more on the intangible side of the continuum. Figure 2 provides a scale of different market entities containing tangible and intangible elements. Products are indicated as tangible were services are indicated as intangible. Shostack (1977) depicted salt at one side of the scale and teaching services at the other side of the scale.

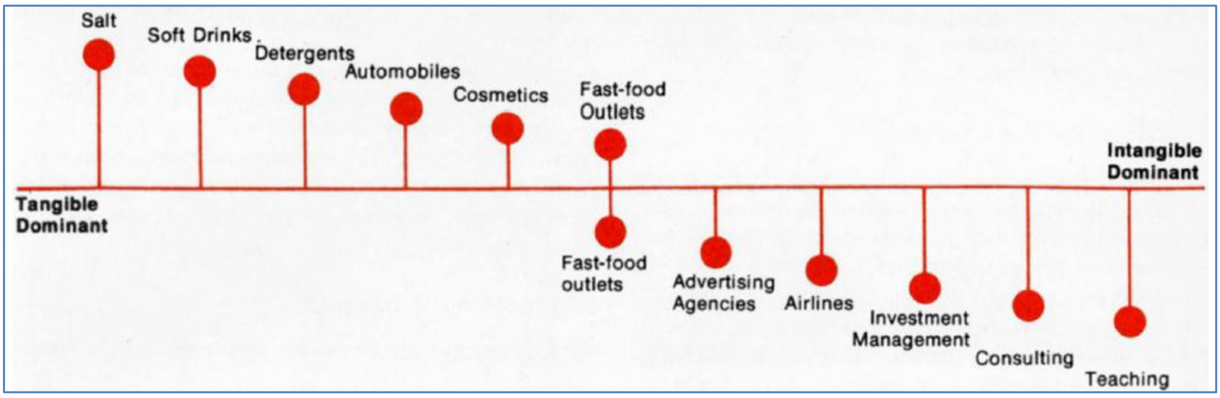

Figure 2: Scale of market entities(Shostack, 1977)

Defining a market purely as tangible or intangible is very hard. This is also the case for Nibag. Within Nibag's market there are both tangible as intangible elements. Examples of intangible elements are safety inspections, sound measurements, advice on redevelopment, and assistance in the application for subsidies. Examples of tangible elements are reports on safety scans and maintenance schedules. Within Nibag the intangible elements are more dominant. Nibag is therefore depicted more as a service organization. The relation between products and services are elaborated more in detail in chapter 2.

This research was executed for the quality department of Nibag. The next section addresses the quality department within Nibag and describes the current situation concerning quality and customer satisfaction.

1.1.2 Quality department

The quality department is headed by the quality manager. He is responsible for the quality of the organization. In their quality policy Nibag states that they want to offer their customers products and services which fulfil the agreed requirements, expectations, delivery times and legal obligations (Endeman, 2011). Based on this description Nibag's definition of customer satisfaction can be derived: *"the extent in which Nibag provides services which fulfils the agreed requirements, expectations, delivery times and legal obligations to their customers"*. When Nibag fulfils the agreed requirements, expectations, delivery times and legal obligations, their customers will be satisfied. Nibag is ISO 9001:2008 certified which means that Nibag has a quality management system. The certification demands from organizations that they continuously improve their quality. Detailed information about the ISO 9001:2008 standard is provided in chapter 2. Nibag has written a quality management manual which was updated in April 2011 (Endeman, 2011). The quality management manual contains the company policy, description of the primary process, supporting processes and the quality processes. The most important aspects concerning customer satisfaction measurement are:

- Paragraph 5.6 Customer satisfaction. The goal of this paragraph is to investigate the extent to which the delivered performance meets the customer requirements and requirements of other stakeholders. The project leaders are responsible for performing the survey on

customer satisfaction. The quality coordinator is responsible for transforming customer signals into improvement proposals.
Nibag is dependent on their customers and therefore wants to meet the requirements of the customer. Key for Nibag is to know and understand the needs and expectations of their future customers. This requires: continuously try to improve the satisfaction of every customer, targeted communication with the customer, and measuring customer satisfaction and take action based on these measurements. The procedure how Nibag investigates customer satisfaction can be found in appendix I.

Other important documents concerning customer satisfaction measurement are:

- Declaration of satisfaction. This document consists of customer information, project information and room for signature. The customer of Nibag, which has to sign this declaration, needs to fill out his or her company details. Next to that the customer needs to describe the project name, the project itself and the activities of Nibag. By signing this form the customer declares that the activities mentioned in this form are performed in such a way that the customer is completely satisfied. This form is often used with tenders when customer references are required. Potential customers are provided with some certainty that Nibag delivers good products and services.
- Customer satisfaction survey. This document tries to capture the satisfaction level of Nibag's customer. Projects with total amount spent under € 20.000 are randomly surveyed by the project leaders of Nibag. The main questions which need to be answered by the customers concern price-quality ratio, communication, planning and the result of the project. Also additional remarks concerning the project can be indicated by the customers. Appendix II contains the customer satisfaction survey for projects where below €1000 is spent. Appendix III contains the customer satisfaction survey for projects where between €1000 and €20.000 is spent. Appendix IV contains the customer satisfaction survey for projects where more than €20.000 euro is spent. With these surveys Nibag can investigate how satisfied their customers are concerning the project which they have conducted. The surveys are manually analysed and stored. The quality coordinator of Nibag indicates that too little is done on measuring customer satisfaction. Currently investigating customer satisfaction is only done briefly, but it is done compulsory. The results of this investigation are not very useful for Nibag. As stated earlier, Nibag does evaluate their quality of services with their customers.
- Improvement proposals. This document contains proposals of employees within Nibag concerning improvements for the company. The document can contain improvements for every aspect within the company, so also for customer satisfaction. The improvement proposal consists of the notification and the cause for this notification. So when an employee sees a possibility for the improvement of customer satisfaction he or she can fill out the improvement proposal form and hand it in by the quality coordinator. Every employee can submit an improvement proposal. The quality coordinator will then evaluate how feasible the improvement is. When a proposal is possible, management will make a decision about who will work out the proposal and which financial resources become available. Also a deadline is set when the proposal needs to be implemented.

1.2 Problem investigation

In order to find out what the problem was within Nibag, informal conversations and interviews were held with the quality manager and an employee who supports the quality department. The two addressed the ISO 9001:2008 standard which was obtained by Nibag and the quality concept in general. The two also mentioned that they wanted to measure customer satisfaction, because it is currently only briefly done within Nibag. ISO 9001:2008 is mainly important for Nibag because their customers request it during their procurement or tenders. Most of the tenders demand from Nibag that they are certified with the ISO 9001:2008 certificate. When organizations have a quality management system, then sending a copy of the certificate is sufficient to prove that the company has a quality management system. When organizations do not have such a system, then they have to ensure that they provide products/services with a sufficient level of quality. Proving that organizations can ensure the quality is often time consuming, where sending only a copy of ISO 9001 certificate is not. Another important reason for ISO 9001:2008 certification is that this standard provides a clearly defined structure which allows organizations to monitor the most important aspects of their quality management system. The ISO certification for Nibag is valid until September 2013.

Due to the conversations it became clear that there was a problem, but how it was structured was vague. Heerkens (2005) proposes a problem bundle which provides a clear overview of the problem structure. The goal of a problem bundle is to provide insight into the problems which occur within an organization and how they are related to each other (Heerkens, 2005). The problems are connected with each other by arrows which indicate the causal relationships. The problems in this problem bundle were identified by conversations with two employees from Nibag (the quality coordinator and the employee which supports the quality department). The problem bundle in Figure 3 describes only the important related problems for this research.

Figure 3: Identified problem bundle of Nibag

Around 1995 Nibag was certified for ISO standards containing quality. In September 2010 Nibag B.V. received ISO 9001:2008 standard. This standard provides a set of standardized requirements for a quality management system. The ISO 9001:2008 standard is valid for 3 years. The certification is for both Nibag's location in Oldenzaal as in Uden. When Nibag does not meet the requirements set by ISO 9001:2008, it will have consequences for the company. A direct consequence is that Nibag first gets a second chance to meet, within a reasonable time, the requirements of the ISO standard. But eventually, when the requirements are still not fulfilled, the certificate will be withdrawn. Indirect consequences are that Nibag will gain, when the certificate is needed, a lower score on tenders. The chance of winning tenders, and therefore increase business, will be reduced. Another consequence is that Nibag has to rearrange some procedures in order to improve their quality and therefore mitigate their company risks. So in order to keep the ISO 9001:2008 certificate, Nibag has to prove that they continuously improve their quality management system. The quality management system consists of four concrete processes. Each of these processes can be improved in order to improve the quality. One of these processes is 'measurement, analysis & improvement of customer satisfaction'. The 'measurement, analysis & improvement of customer satisfaction' process can be improved by increasing the satisfaction level of customers. Before you can improve customer satisfaction, Nibag has to know what the current state of customer satisfaction is. This can be done by analysing the customer satisfaction. In order to analyse the customer satisfaction, Nibag has to measure the customer satisfaction. Measurement of customer satisfaction provides Nibag information which can be used for improving their business. During the conversation it became clear that too little was done on customer satisfaction measurement and that Nibag does not have a suitable instrument or process which can measure customer satisfaction. The current approach towards customer satisfaction was already addressed in the previous section. Nibag randomly surveys their customers to 'measure' their satisfaction. On an annual basis an evaluative conversation takes place with at least ten customers from projects bigger than € 20.000. Customers of less than €20.000 projects are randomly surveyed by Nibag. The most important topics, which are addressed by the survey, concern price-quality ratio, communication, planning and project result. Most of the questions are asked in open form. This means that the customer can provide an extensive answer. Advantages of open questions are that unanticipated findings can be discovered and respondents can qualify and clarify responses. Disadvantages are: respondents may not have considered all alternatives, more time and mental effort is required from respondents and coding of results are difficult and time consuming (Moody & Mueller, 2009). Figure 4 describes the current process of customer satisfaction measurement within Nibag.

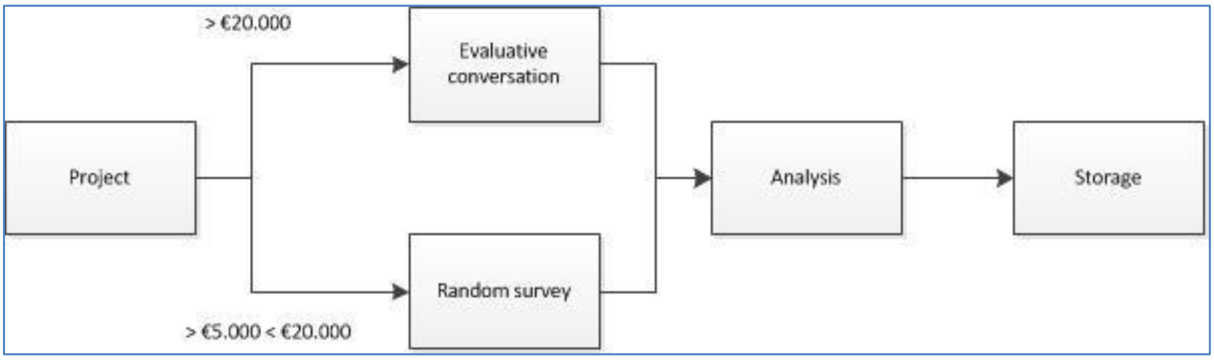

Figure 4: Current process towards the measurement of customer satisfaction

The most important conclusion which can be drawn, after this investigation, is that the measurement of customer satisfaction process within Nibag can be improved. Based on the stored customer satisfaction forms it can be concluded that customer satisfaction is not often measured. Another important aspect which is missing is the feedback. Currently the customer satisfaction forms are stored but the analysis is not conducted, which makes feedback difficult. Feedback provides organizations guidelines to improve their business. The quality coordinator agrees with this observation and states that too little is done on customer satisfaction measurement. When the results from customer satisfaction measurement are analysed it can provide useful insights on current business processes. This feedback can help Nibag with improving their quality of services. A more structured way of surveying customers with more structured questions can help Nibag with more frequently measuring and analysing customer satisfaction.

More conversations with the two employees made clear that providing high quality services to customers was also very important. From within Nibag the employees want to help their customers in the best way possible by delivering high quality service. The level of quality can be indicated by customers. They acquire services from Nibag and therefore indicate how satisfied they are about the quality of the service. How satisfied the customers are, is a way of indicating the level of quality. Customer satisfaction first has to be analysed and measured before the quality level can be indicated. Whenever customers indicate that the service they received is below the quality level that they expected, Nibag wants to improve the delivered service and change their processes is such a way that the level of quality increases.

So the underlying problem where this research focusses on is the measurement of customer satisfaction. When customer satisfaction is measured, it eventually leads to high quality of services and maintaining the ISO 9001:2008 certificate. The goal of this research therefore can be defined as:

'To improve the business of Nibag by developing a measurement and analysis instrument which provide the current state and advice on Nibag's customer satisfaction in order to provide better quality of services and improve the quality management system of Nibag'.

Now the problems and goal were clear a research question could be proposed. The research question for this research was defined as follows:

"How can Nibag measure the satisfaction of their customers in order to continuously improve the quality of their provided services and their quality management system?"

1.3 Research questions

This section provides the sub-research questions of this research. The sub-research questions will be answered in order to provide an answer for the research question of this research.

Before we can introduce a new situation within Nibag concerning customer satisfaction, we have to know what the current situation looks like. This will be covered by the first sub-research question:

SQ1: How does Nibag currently deal with customer satisfaction?

a. What is the current definition, measurement and process towards customer satisfaction?

b. What problems are encountered?

When the current situation is clear, a more scientific approach is needed. Aspects such as customer satisfaction and ISO 9001:2008 have already been studied by researchers in the past. In order to get these aspects clear for this research, the following research questions are proposed.

SQ2: What does literature state about customer satisfaction?

SQ3: What does literature state about ISO 9001:2008 standard?

When SQ2 and SQ3 are answered, the conceptual background of the research question is described. Now we know what customer satisfaction is we want to measure it. What exactly needs to be measured is unclear. The following research question addresses this problem:

SQ4: What aspects of customer satisfaction should be measured?

a. Which aspects can be identified by literature?
b. Which aspects, from Nibag's experience with customers, are important concerning customer satisfaction?
c. Which aspects do customers of Nibag find important concerning customer satisfaction?

The aspects of customer satisfaction which should be measured are now clear. But how these aspects of customer satisfaction can be measured is not clear. The following research question addresses this problem:

SQ5: How can customer satisfaction be measured?

SQ4 provides the content for the instrument which can be used for measuring customer satisfaction. When applying the instrument, Nibag will get insights on how satisfied their customers are. Nibag will be able to use this instrument in different moments in time. The results of this application can be analysed. The following research question gives insight in the performance of Nibag concerning customer satisfaction.

SQ6: What is the current satisfaction level of Nibag's customers?

Nibag can analyse the results and gain insights on customer satisfaction aspects which are fine and which need improvement. Action should be taken to improve the aspects which dissatisfy customers of Nibag. Based on the results and the analysis conclusions can be drawn. How these conclusions can help Nibag improving their business, by measuring customer satisfaction, is addressed by the following research question:

SQ7: How does this research help Nibag improving their business?

a. What conclusions can be drawn?
b. What can be recommended from this research?

Answering SQ7 will conclude whether or not the goal of this research, which has been set in the previous section, has been achieved. Measuring and analysing customer satisfaction at different moments and acting upon it when necessary, improves Nibag's quality management system. This will contribute to the preservation of ISO 9001:2008 certification.

1.4 Research model

This section contains the model and approach which is used in this research. Table 1 provides a clear overview of the research questions in relation with how they were answered and the corresponding reasoning why they were answered in this particular way.

Table 1: Overview of how research questions are answered and the corresponding reasoning

Research question	Answered with use of	Reasoning
SQ1	Interviews Company literature	Interviews are conducted and company literature, such as the quality management manual, is addressed in order to find out what the current situation is concerning customer satisfaction and which problems are encountered. Company literature provides information on how Nibag copes with customer satisfaction issues. Interviews provide additional information and will be used to investigate and define the problem(s).
SQ2	Informal literature search	Customer satisfaction is the main topic of this research. The concept of customer satisfaction is addressed by investigating scientific literature. Customer satisfaction will

		be defined, so this concept is clear for the remainder of this research (a systematic literature review is not included).
SQ3	ISO 9001:2008 manual ISO website	The ISO 9001:2008 standard is an important concept for this research. Therefore it is crucial that it is described clearly. Both ISO website and handbook provide information on what ISO 9001:2008 standard is and its relationship with customer satisfaction.
SQ4a	Systematic literature review	To find out which factors should be measured in order to identify how satisfied customers are, a systematic literature review is conducted. A systematic literature review is chosen because it ensures that the chance of not including a relevant paper about customer satisfaction factors is reduced to a minimum.
SQ4b	Workshop	Customer satisfaction factors identified by literature can differ from the factors which Nibag considers important for their customers. To investigate this possible difference a workshop is conducted. A workshop is a fun and useful way to obtain knowledge and ideas from practice. In the workshop participants should identify customer satisfaction factors and review identified factors from literature.
SQ4c	Interview	Customer satisfaction factors identified by literature can also differ from the factors reflected as important by customers. To investigate this possible difference interviews are conducted. An interview is a method for a person in order to systematically gain knowledge from another person. In the interview customers should identify customer satisfaction factors and review identified factors from literature.
SQ5	Informal literature research Internet search Results from literature review, workshop and interviews. Expert panels	There are several methods which can be used as research method. An informal literature research identifies which method is the most appropriate for this research. An internet search will provide the most suitable application for this research. The results from the literature review, workshop and interviews will be used as input for the design of the instrument. Experts will be provided with instrument before it is going to be applied in practice. Experts need to review the ease of use, relevancy, usability etc. In this way the tool will be validated. Based on the validation, together with the comparison of factors from literature, workshop and interviews, current literature can be discussed.
SQ6	Results from instrument	Customers will use the instrument to indicate their satisfaction level towards Nibag by using the tool selected in SQ5 which uses the input provided by SQ4a, SQ4b and SQ4c. The results of the instrument will indicate how satisfied customers of Nibag are and based on these results an advice can be provided.
SQ7	Analysis of results	Based on the analysis of the results, several conclusions can be drawn and recommendations can be given. It is

	important to know how these conclusions can help Nibag in improving their business by measuring their customer satisfaction, in order to provide high quality service to their customers.

The approach addressed in Table 1 is schematically shown in Figure 5.

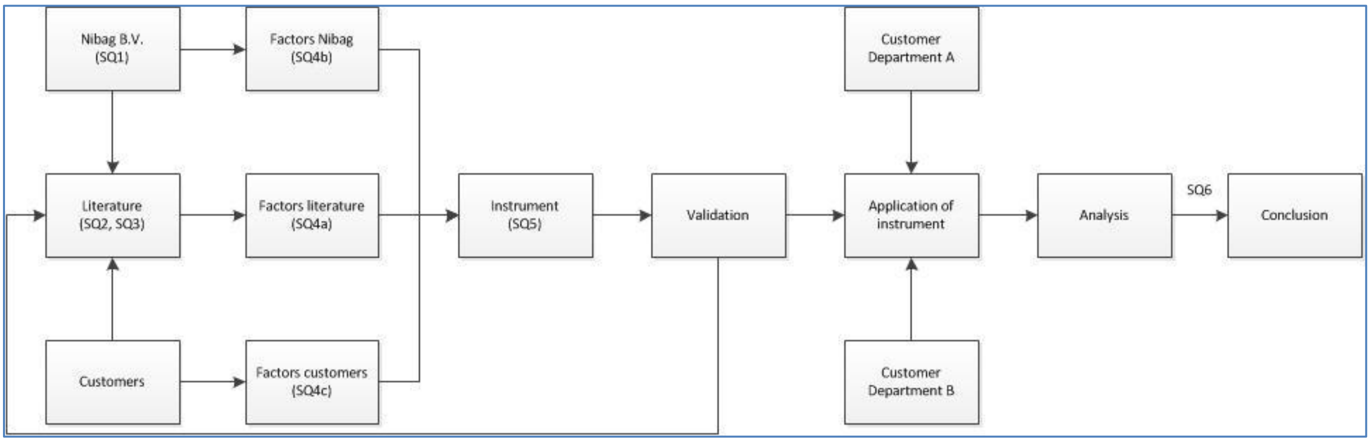

Figure 5: Research model

1.5 Scope

The problem bundle indicated that two important 'problems' could be identified. These two problems were preserving ISO 9001:2009 certification and continuously provide high quality services. Improving the quality management system, in order to keep ISO 9001:2008 certification, can be done by improving several processes (see section 2.2 for detailed information on the ISO 9001:2008 certification). 'Measurement, analysis & improvement of customer satisfaction' is one of these processes. The EFQM model describes how the organization can improve their performance (described in detail in section 2.3.3). This model describes enablers of business processes which influence the business results. One of these results comes from customers. How customers perceive the business processes indicates the performance or quality. Both problems can eventually be addressed by measuring the satisfaction level of customers. Measurement of customer satisfaction is part of the 'measurement, analysis & improvement of customer satisfaction' process and indicates the quality level of the organization. So focusing on customer satisfaction measurement improves the quality management system and gives insights in how to improve the service quality. It therefore is chosen as the scope of this research.

1.6 Practical relevance

The practical relevance of this research has already briefly been described in the previous sections. Employees of Nibag want to provide high quality services to their customers. Next to that, Nibag acquired ISO 9001:2008 certification which proves that they provide high quality products and services. For both aspects it became clear that measuring customer satisfaction, in different moments in time, provided Nibag with insights on their customer satisfaction level and quality level. Analysing this data provided information on which aspects Nibag performs well or on which aspects action needs to be taken. Focusing on and improving the negative aspects results in a higher level of customer satisfaction. With the measurement instrument Nibag proved that they continuously improved their quality management system and therefore should preserve their ISO 9001:2008 certification. The tool could also be used for indicating and improving the quality level of services offered to customers. So this research supports Nibag and other organizations with improving quality of services offered and maintaining ISO 9001:2008 certificate by using the developed instrument for measuring customer satisfaction.

1.7 Theoretical relevance

In this research an instrument was designed which could be used for measuring the satisfaction of Nibag's customers. Factors from literature, concerning customer satisfaction, were identified and reviewed by both customers and employees of Nibag. In this way current literature was reviewed on relevance and importance to investigate the applicability in a practical context. Nibag is a small to medium sized enterprise (SME) and provides professional service to their customers on housing management related aspects such as safety, sound, energy etc. In current literature there does not exist a specific research instrument which can be used by companies, such as Nibag, to measure their customer satisfaction. The identification of customer satisfaction factors from literature together with its review by practice and the importance ranking of customer satisfaction factors by Nibag and their customers resulted in a list of factors which are key for measuring customer satisfaction. So this research is relevant for theory, because factors from literature are identified and reviewed on their applicability in practice. Next to that a customer satisfaction measurement instrument is designed which can be used by small to medium sized enterprises which provide professional services on housing management.

1.8 Thesis structure

This chapter provides the foundation for this research. Chapter 2 provides the theoretical background used for this research. Chapter 3 contains the systematic literature review and its findings on customer satisfaction factors. These factors were used for the instrument design which is presented in chapter 4. This chapter also contains the comparison of factors identified by literature, Nibag and their customers. In chapter 5 the data collection approach is described. The analysis of the results which were obtained after applying the instrument in practice is provided in chapter 6. The research is discussed in chapter 7. This chapter also draws conclusions and provides recommendations. The table below provides a clear overview of the topics and sub-research questions which are addressed in following chapters.

Table 2: Overview of which research questions are answered in which chapter

Chapter	Topic	Sub-research question addressed
2	Theoretical background	SQ 1, SQ2, SQ3
3	Literature	SQ4a
4	Instrument design	SQ4b, SQ4c
5	Data collection	SQ5
6	Analysis	SQ6
7	Discussion	SQ7

2 Theoretical background

This chapter provides literature about the important concepts of this research. In section 2.1 literature about customer satisfaction is investigated which defines the concept of customer satisfaction. Section 2.2 provides information about the ISO 9001:2008 standard and its relation with customer satisfaction. The concept of quality in relation to services is elaborated in section 2.3. Section 2.4 addresses the importance-performance analysis which is used in this research. This chapter ends with a conclusion and concluding remarks in section 2.5.

2.1 Customer satisfaction

In their literature review on customer satisfaction, J. Tang and Wang (2008) state that customer satisfaction has its origin in the marketing sector. This is because they found that Cardozo (1965) believed that customer satisfaction would increase the re-purchase behaviours of customers. The importance of customer satisfaction has been recognized since the seventies by both the academic and pragmatic worlds. Customer satisfaction has been intensively discussed in the areas of consumer and marketing research for more than two decades (Hennig-Thurau & Klee, 1997). Hunt (1977) mentioned that since the mid-1970s annual conferences have been held on customer satisfaction. The proceedings of these conferences are being published since 1981 in the *Journal of Customer Satisfaction, Dissatisfaction and Complaining Behavior*. In the nineties the marketing strategies of the organizations aimed at ‘retaining old customers’ (J. Tang & Wang, 2008). This is because retaining old customers is five time less costly than acquiring a new customer (Peterson & Wilson, 1992).

J. Tang and Wang (2008) proposed different definitions of customer satisfaction in their literature review. The sources and definitions can be found in Table 3.

Table 3: Definitions of customer satisfaction (J. Tang & Wang, 2008)

Source	Definitions
Howard and Sheth (1969)	“a buyer's psychological state of being adequately or inadequately rewarded for the sacrifices he or she has undergone”.
Oliver (1981)	“an emotional response to certain product or service; thus its level is influenced by the perceived performance and expected performance. If the perceived performance is lower than customer's expectation, he or she will feel unsatisfied. If the perceived performance conforms to expected performance, the customer will be satisfied”.
Woodruff (1983)	“an affective response from the experience of consumption”.
Kotler (1992)	“a post-purchase evaluation of the product quality under the pre-purchase expectation. It is the pleasant or disappointed feeling generated after the comparison between the perceived performance of the product and the personal expectation”.
Peterson and Wilson (1992)	“a process to compare “the consumers’ prior expectations of the product and the subsequent perceived performance provided by the enterprises”, and furthermore to determine if the product is as nice as their expectation or imagination and to form the overall attitude toward such product”.

The table provides customer satisfaction definitions from different researchers. Also the International Standard for Organisations (ISO) concerns itself with customer satisfaction. In his ISO 9000 quality systems handbook Hoyle (2001) states that ISO 9000 combines the terms ‘customer satisfaction' and 'requirement' and therefore defines customer satisfaction as "the customer's perception of the degree to which the customer's stated or implied needs or expectations have been fulfilled". ISO and most of the researchers address the gap between the expectations and the perceived value of, for example a product or service. When the perceived value exceeds the expectations then customers will be satisfied. The other way around when the perceived value does not meet the expectations, the customers will be dissatisfied. ISO has an important place in this research, because it provided the quality management standard where Nibag complies with. As already addressed in the previous chapter, it is important for Nibag to meet the requirements set by the ISO standard. The definition of ISO also shows resemblance with the definitions provided by theory. So therefore customer satisfaction is defined in this research as: *the customer's perception of the degree to which the customer's stated or implied needs or expectations have been fulfilled.*

The importance of customer satisfaction is widely recognized in scientific literature. In today's highly competitive business environment and global economy it may be fatal for business organizations to be non-customer oriented (Dimistrades, 2006). Dimistrades (2006) also states that customer-centred organizations, that can deliver value, will survive in the modern business arena. In order to gain highly satisfied and loyal customers, organizations focus on producing services of high quality and world class products. Customer satisfaction has effect on organizations' market share and customer retention and therefore is considered as a key success factor for every profit oriented organization. Satisfied customers are likely to be less influenced by competitors, stay loyal longer and are less price sensitive (Dimistrades, 2006). The importance of customer satisfaction is also recognized by Peter Drucker, a management guru. He once said "Satisfying customers' needs and winning their 'satisfaction' and loyalty are the foundation to business" (J. Tang & Wang, 2008).

The importance of measuring customer satisfaction is also recognized by scientific literature. Cockalo, Djordjevic, and Sajfert (2011) state that formalising the measurement of customer satisfaction is supported by technical marketing literature. Some issues where technical marketing literature is mainly concerned with are developing different concepts of customer satisfaction which can be evaluated (Griffin & Hauser, 1993) and designing effective customer satisfaction data collection and reporting systems (McQuance & McIntyre, 1992). An example of an instrument which can be used for collecting data about customers' demands is proposed by J. Tang and Wang (2008). They state that in order to satisfy the different requirements of customers, organizations have carried out "customer satisfaction surveys" to grip customers' information and understand their demands.

2.2 NEN-EN-ISO 9001:2008

This section provides more detailed information about the ISO standard and the updated version: ISO 9001:2008 standard. The main information sources for describing and analysing the NEN-EN-ISO 9001:2008 standard were the norm for 'kwaliteitsmanagementsystemen – eisen' (Dutch translation of quality management system - requirements) and handbook 'kwaliteitsmanagement' (Dutch translation of quality management manual).

The NEN-EN-ISO 9001:2008 certificate shows that an organization meets the norm which is set in this standard. ISO 9001:2008 standard is developed by the International Organization for Standardization. ISO is a worldwide federation of national normalisation institutes (the ISO members). ISO consists of several technical committees which generally perform the preparatory work for international norms. Each member which is interested in a subject, for whom a technical committee is composed, has the right to be represented in this committee. International organizations, both governmental institutions and non-governmental institutions, take in collaboration with ISO part in these activities (Normcommissie_400_176_"Kwaliteitsmanagement", 2008).

ISO 9000 consists of a family of standards. These standards represent an international consensus on good quality management practices. It consists of standards and guidelines relating to quality management systems and related supporting standards (ISO_9000).

ISO 9001:2008 is the standard that provides a set of standardized requirements for a quality management system. This standard can be used in multiple organizations regardless of what this organization does, its size, or whether it is in the private, or public sector. ISO 9001:2008 is the only standard in the family against which organizations can be certified, although certification is not a compulsory requirement of the standard (ISO_9000).

According to the International Organization for Standardization (ISO) organizations should implement the ISO 9001:2008 standard in order to satisfy their customers. Customer satisfaction is specified in this standard in clause 8.2.1: "business should monitor information pertain to customers' feelings, regardless the business meets the demand of customers, as measurement for quality management system". The ISO 9001 standard demands from organizations that they monitor their customer satisfaction. ISO state that without satisfied customers, an organization is in peril. In order to keep the customers satisfied, the organization needs to meet their requirements. The ISO 9001:2008 standard provides a tried and tested framework for taking a systematic approach to managing the organization's processes so that they consistently turn out product that satisfies customers' expectations (ISO_9000).

The main focus of ISO 9001:2008 lies on the requirements of the quality management system. Important aspect within this quality management system is the customer. Customers are important because they provide the requirements for a product or service. When the product or service is delivered, the customer has a certain satisfaction level. The quality management system consists of five processes:

- Quality management system. The organization has to initialize, document, import and maintain the quality management system in accordance with the requirements of the international norm. The organization also has to continuously improve this system (Normcommissie_400_176_"Kwaliteitsmanagement", 2008).
- Management responsibility. Management has to provide evidence of their involvement in the development and implementation of the quality management system and in the continual improvement of the efficiency by determining the quality policy, achieving that the quality targets are set, performing management reviews, achieving the availability of resources and to reveal the importance to meet the customer requirements and laws and regulations. Important topics for management responsibility are: management involvement, customer focus, quality policy, planning, responsibility, competence and communication and management review (Normcommissie_400_176_"Kwaliteitsmanagement", 2008).

- Resource management. The organization has to carefully manage their resources in order to meet the customer requirements. Important resources are staff, infrastructure, work environment and skills, training and consciousness (Normcommissie_400_176_"Kwaliteitsmanagement", 2008).
- Product realization. The organization has to plan and develop the processes which are necessary for realizing the product. The planning of the product realization has to be consistent with the requirements of the other processes of the quality management system. Important topics within the product realization process are planning of the realization of the product, processes which concerns the customer, design and development, procurement, production and providing services and controlling monitoring and measurement equipment. (Normcommissie_400_176_"Kwaliteitsmanagement", 2008).
- Measurement, analysis and improvement. The organization has to plan and implement the needed monitoring, measuring, analysis and improvement processes in order to prove that the product meet the requirements, to achieve that the quality management system meet the requirements and to continuously improve the efficiency of the quality management system. Important topics for measurement, analysis and improvement are monitoring and measurement, controlling deviating products, analysis of data and improvement (Normcommissie_400_176_"Kwaliteitsmanagement", 2008).

Figure 6 shows the five processes and their relation with the customers. The quality management system starts with the interaction between customer and management. Management has certain resources in order to execute their business (staff, infrastructure, work environment etc.). The customer has certain requirements for a product or service which they want to buy or obtain from the organization. These requirements are used,

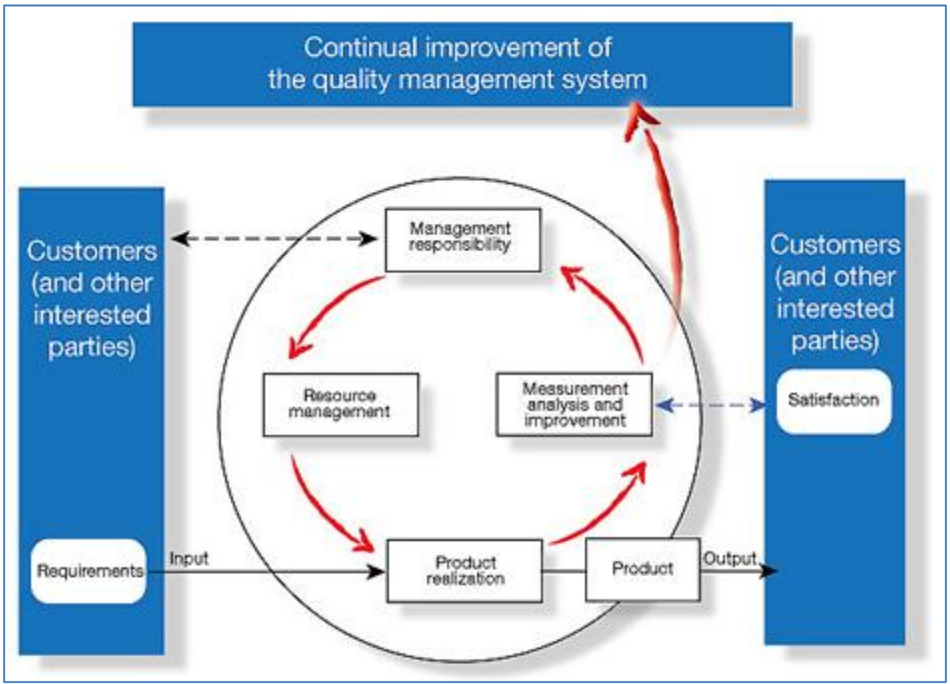

Figure 6: Model of a process based quality management system

together with organizational resources, as input for the product realization phase. In this phase the input is processed into the desired output (product or service). The customer receives the product or service and has a certain satisfaction level. When the product or service for example meets all the requirements, the customer will be very satisfied. The customer satisfaction is measured, analysed and improved (when necessary). Management has the responsibility to make sure these measurements and analyses are actually performed and that the improvements are actually implemented. Management has also the responsibility to continuously perform this cycle in order to continuously improve the quality management system.

A methodology which can be used in the five processes mentioned above is 'Plan-Do-Check-Act' (PDCA). This methodology consists of the following aspects:

- Plan, confirming targets and processes which are needed in order to accomplish results which agree with the requirements of customers and the policy of the organization.
- Do, implementing the processes
- Check, monitoring and measuring processes and products compared to policy, targets and requirements of a products as well as reporting the results
- Act, taking measures in order to continuously improve the process performance

The PDCA methodology makes sure that each process is performed in a step-wise manner and that these processes are continuously improved (Normcommissie_400_176_"Kwaliteitsmanagement", 2008).

2.3 Service Quality

As can be read in the previous chapter the quality management system demands continues improvement on quality. Service quality is highly related to satisfaction and that is why Nibag wants to provide high quality service to its customers. This is why the concept of quality in relation to service is elaborated in this section.

2.3.1 Product-service relation and service quality

Chapter 1 already addressed the relationship between product and service. Shostack (1977) mentioned that markets often deliver products where service are closely related and the other way around. This is also recognized by Grönroos (1984). He links the product-service relationship with quality of services. Grönroos (1984) states that service is basically immaterial and can be characterised as an activity where production and consumption to a considerable extent take place simultaneously. An example is a hotel guest which gets a room and a bed to sleep in. The hotel guest gets served (service) and receives a room with a bed (products). The technical outcome of the production process corresponds to the instrumental performance of the service. This technical outcome of the process (*what* the consumer receives as a result of his interactions with a service firm) is important to him and to his evaluation of the quality of the service (Grönroos, 1984). The quality of the service will also be influenced by the way in which the technical quality is transferred to him functionally. An example is the appearance and behaviour of hotel staff. So the consumer is not only interested in what he receives as an outcome of the production process, but in the process itself. *How* the technical outcome functionally is received by the consumer influences his view on the service. So technical quality answers the question of *what* the customer gets, and functional quality answers the question of *how* he gets it (Grönroos, 1984).

2.3.2 SERVQUAL

One of the most known models concerning service quality is the SERVQUAL model developed by Parasuraman, Zeithaml, and Berry (1988). The SERVQUAL model can be used to assess customer perceptions of service quality in service and retailing organizations. The authors state that quality, conceptualized in the service literature, involves perceived quality. Perceived quality is the consumer's judgment about an entity's overall excellence or superiority (Zeithaml, 1987). In relation to customer satisfaction Parasuraman, Zeithaml, and Berry (1985) state that a distinction can be made between service quality and satisfaction. Perceived service quality is a global judgment, or attitude, relating to the superiority of the service, whereas satisfaction is related to a specific transaction. In an exploratory research, Parasuraman et al. (1985) related service quality with satisfaction. In this research respondents gave illustrations of instances when they were satisfied with a specific service but did not feel the service firm was of high quality. The authors concluded that incidents of satisfaction over time result in perceptions of service quality. The research conducted by Parasuraman et al. (1988) resulted eventually in the SERVQUAL model which consists of the following five dimensions:

- Tangibles: Physical facilities, equipment, and appearance of personnel
- Reliability: Ability to perform the promised service dependably and accurately
- Assurance: Knowledge and courtesy of employees and their ability to inspire trust and confidence
- Empathy: Caring, individualized attention the firm provides its customers
- Responsiveness: Willingness to help customers and provide prompt service

The SERVQUAL model, containing these five dimensions, could be used by retailers (and other service organizations) to better understand the service expectations and perceptions of consumers and, as a result, improve service.

2.3.3 EFQM

A well-known framework for improving performance within businesses is the EFQM Excellence model. In his article Russel (2000) compares the ISO 9001:2000 model with the EFQM model. The ISO 9001:2000 model, which is a predecessor of the ISO 9001:2008 model, has already been described in this chapter. The EFQM model is explained in this section. Russel (2000) describes the EFQM models as a non-prescriptive framework which recognises that there are many approaches for achieving sustainable excellence in all aspects of performance. Furthermore he stated that the nine criteria of the model address all activities and all interested parties/stakeholders of an organization enabling the assessment of progress towards excellence. The nine criteria can be divided between enablers and results. The enablers are leadership, people management, policy and strategy, partnership & resource and processes. How these enablers are organized and executed within organizations have influence on the results of the organization. The results are divided in people results, customer results, society results and key performance results. These results can be used for innovation and learning. This is an on-going cycle, so organizations can keep on improving their business (Russel, 2000). When, for example, customers indicate that the communication with people from the organizations is bad, and then the organization can learn from this and adapt their people management. In the conclusion Russel (2000) mentioned some initiatives which can support business on the nine aspects. Figure 7 shows the EFQM model and the supporting initiatives.

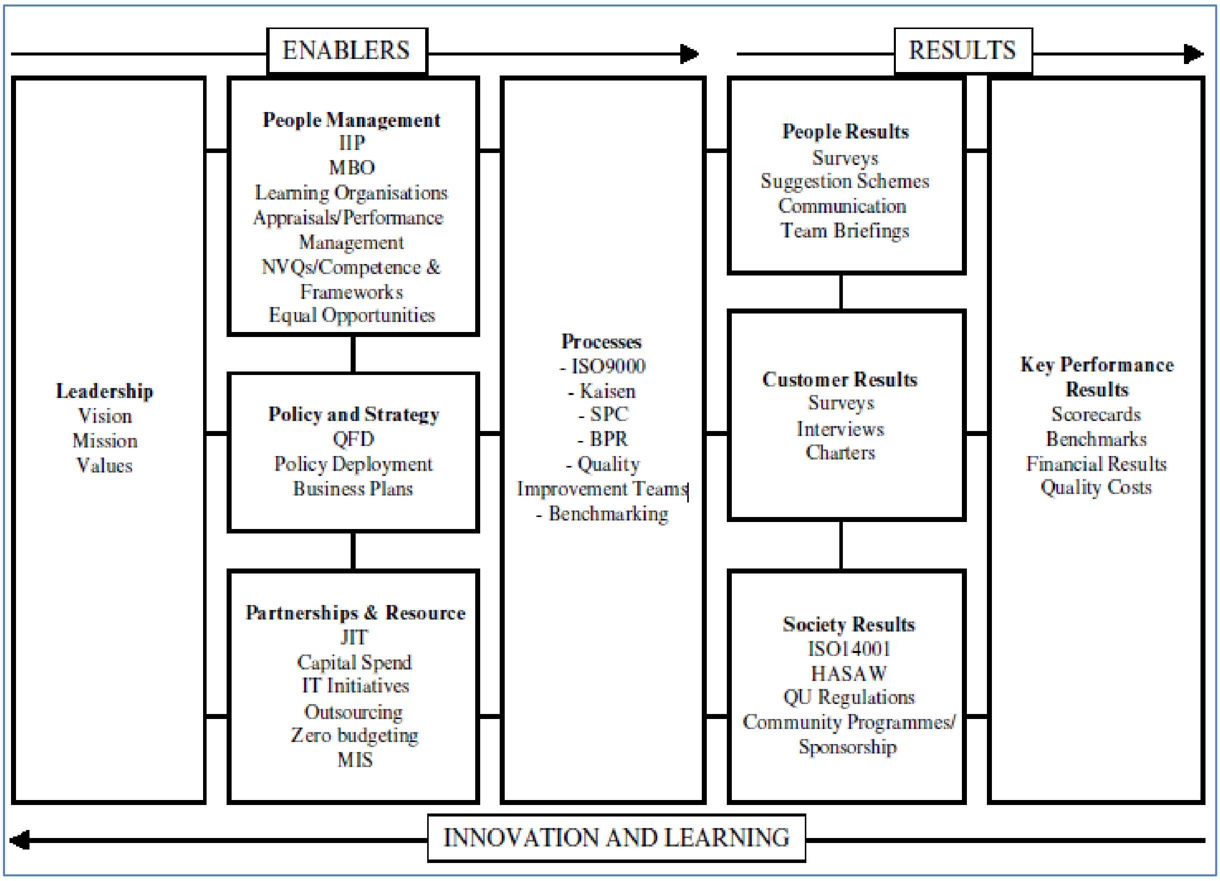

Figure 7: EFQM model with supporting initiatives(Russel, 2000)

2.4 Importance-Performance Analysis (IPA)

The results of the customer satisfaction measurement have to be analysed in order to provide management of Nibag information on how to improve their customer satisfaction. The method which was selected for the analysis of customer satisfaction results is the Importance-Performance Analysis (IPA). This analysis method which was first introduced by Martilla and James (1977). The IPA provides insights into which attributes an organization should invest more resources and which attributes take too many resources. IPA identifies attributes that have a low performance and therefore need to be improved. The method also identifies which attributes are the most important to the customer and have the highest impact on customer satisfaction. A two dimensional matrix was proposed by Martilla and James (1977) with performance (satisfaction) depicted on the x-axis and importance depicted along the y-axis. A graphic representation of this matrix can be found in figure 8.

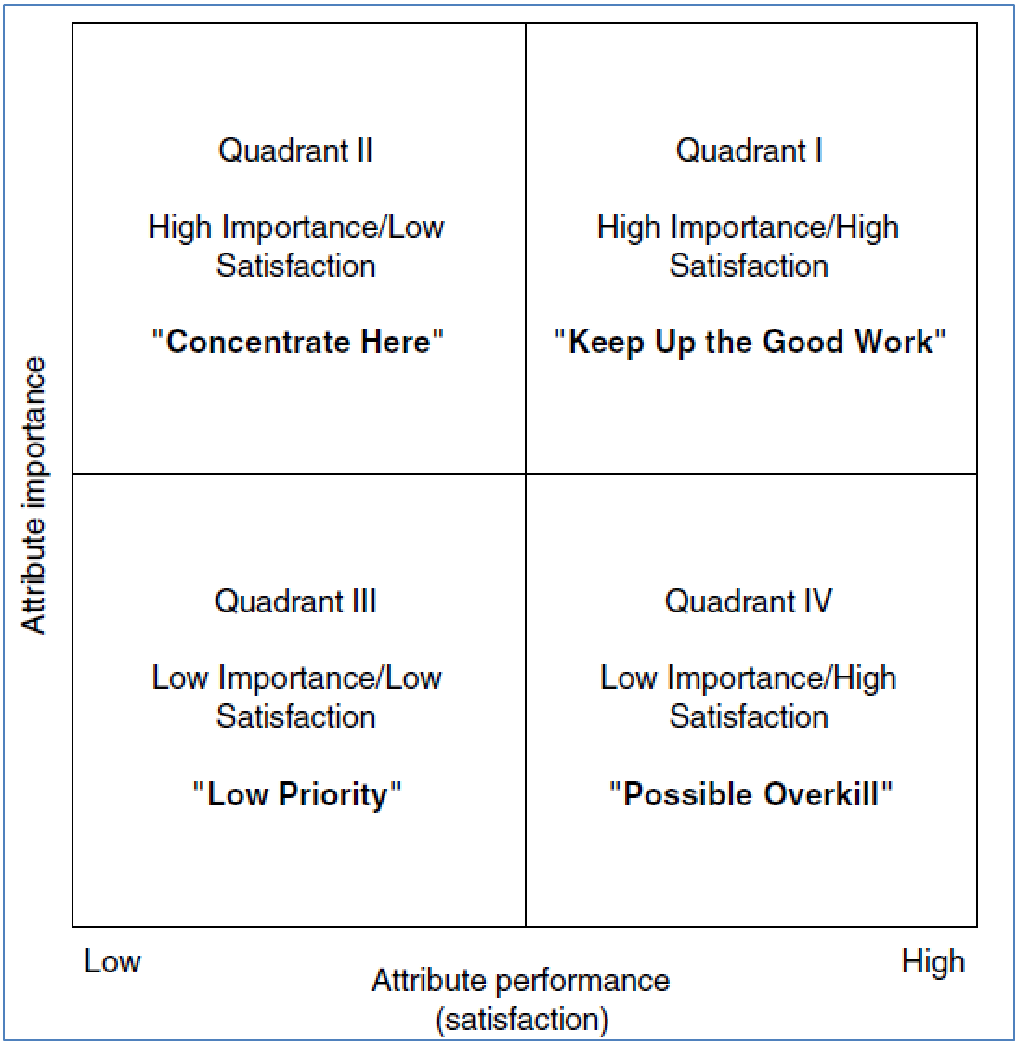

Figure 8: Importance-Performance Analysis (Martilla & James, 1977)

The identified factors are scored on importance and satisfaction. Based on these scores the factors are placed somewhere in the matrix. The matrix is divided into four quadrants. From these quadrants four recommendations for customer satisfaction management can be derived:

- Quadrant I: Attributes in this quadrant are evaluated high both in satisfaction and importance. The attributes represent opportunities for gaining or maintaining competitive advantages. An organization should 'keep up the good' work in this quadrant.
- Quadrant II: Attributes in this quadrant are evaluated low in satisfaction and high in importance. These attributes demand immediate attention from the organization. In order to improve customer satisfaction an organization should 'concentrate' on these attributes.
- Quadrant III: Attributes in this quadrant are evaluated both low in satisfaction and importance. An organization does not have to focus on these attributes because they are of 'low priority'.
- Quadrant IV: Attributes in this quadrant are evaluated high in satisfaction but low in importance. This means that resources committed to these attributes would be better invested elsewhere. High performance on unimportant attributes indicates a 'possible overkill' (Matzler, Sauerwein, & Heischmidt, 2003).

Section 6.1 provides more information about the IPA and how this method is used in this research.

2.5 Concluding remarks

The most important aspects of this research (customer satisfaction, ISO 9001:2008 and quality) have been addressed. A literature search was conducted in order to provide a clear overview of some key customer satisfaction concepts. Interesting to see was the difference between the definitions of customer satisfaction from theory (including ISO) and Nibag. Nibag defined customer satisfaction as: *"the extent to which Nibag provides services which fulfil the agreed requirements, expectations, delivery times and legal obligations to their customers"* where theory defined customer satisfaction as: "*the customer's perception of the degree to which the customer's stated or implied needs or expectations have been fulfilled"*. The difference can be found in the implied needs. The definition from theory is more detailed and focuses on the implied needs. The definition from Nibag does not capture the implied needs and only focuses only the agreed requirements, expectations, delivery time and legal obligations. In the light of this research it means that the measurement of customer satisfaction can be perceived differently by theory and Nibag. Factors of customer satisfaction identified by Nibag can therefore differ from factors identified by theory.

Company literature about ISO 9001:2008 was addressed in order to provide important information about this aspect. In the problem investigation it became clear that Nibag wants to preserve their ISO 9001:2008 certification. Additional information on a more detailed level identified this concept.

The quality concept was addressed from a service perspective. This was done in three different ways. First the connection between products and services in relation to quality was addressed. Nibag provides professional services to their customers and how these services are related to quality was described. Next a well-known model for service quality (SERVQUAL) was mentioned. Nibag wants to provide service with high quality. The model provided the dimensions of service quality which should be taken into account. The last section described the EFQM model addressing nine aspects (both enablers and results) which together can be used to improve quality. Customer results is the most interesting for this research. The EFQM model provides initiatives which support the business in obtaining customer results. The model can also be used to trace back the 'results of customers'. When customer results indicate that customers are not satisfied, the problem can be traced back to one (or more) enablers. Adapting this (or these) enablers will result in better customer results. The EFQM also helps in defining the scope of this research. The EFQM model showed that the way an organization operates (enablers) has influence on multiple results aspects. We chose to focus on customer results, because the measurement of customer satisfaction is an important aspect of the ISO 9001:2008 standard and it results in high quality service for customers.

The importance-performance analysis is chosen because it provides insights into which attributes an organization should invest more resources and which attributes take too many resources. IPA identifies attributes that have a low performance and therefore need to be improved. The method also identifies which attributes are the most important to the customer and have the highest impact on customer satisfaction.

The three concepts will serve as theoretical background for the reader for the remainder of this thesis. The IPA will be used in the analysis of the results (chapter 6). Chapter 3 describes the systematic literature review which was conducted to investigate which customer satisfaction factors should be measured.

3 Literature review

This chapter describes the approach and results of the systematic literature review which was conducted. This review identified the factors for the measurement of customer satisfaction. The approach used for this review can be found in section 3.1. Section 3.2 contains the findings of the literature review. The factors which related to each other were grouped together and defined in section 3.3. This chapter ends with a conclusion and concluding remarks in section 3.4.

3.1 Literature review approach

This section describes the literature review which was conducted on customer satisfaction. The main goal of this literature review is to identify aspects of customer satisfaction from theory. The importance of a good literature review is recognized by Moody and Mueller (2009). They based their research on several scientific articles, such as Webster and Webster (2002) about how to do a literature review. Moody and Mueller (2009) stated that a literature review plays a critical role in identifying, refining and focusing the research question, theory building and research design. The authors also concluded that literature reviews can save a lot of time and effort. A good literature review follows an explicit and systematic methodology. This methodology consists of the following elements (Moody & Mueller, 2009):

- Clearly defined (and justified) choice of search engines
- Clearly defined (and justified) choice of keywords
- Clearly defined selection criteria
- Clearly defined prioritisation criteria
- Evaluation (critical analysis) and synthesis of papers not just sequential description/summarisation

The following sections provide a brief description of the steps taken during this research. This research followed the systematic methodology proposed by Moody and Mueller (2009).Some changes were made and some extra steps were added.

3.1.1 Step 1: Selection of search engines

The first step of the systematic literature review is the choice of search engines. Search engines search across a wide range of journals and conferences. The journals and conferences contain qualitative articles, because they were peer reviewed. Peer reviews methods are employed to maintain standards, improve performance and provide credibility. The peer reviews are conducted by qualified individuals within the relevant field. Articles obtained from the World Wide Web often lack these reviews so quality cannot be ensured. For this research both Scopus and Web of Knowledge were used as search engines for searching scientific literature. These search engines search across a wide range of journals and conferences. The University of Twente stated that their library ensures high quality of scientific literature. The University of Twente defines these two search engines at their website. Scopus includes a collection of scientific articles. The articles often include abstracts and most of the times references, and a link towards the full text of articles (if they exists). Articles have their origin in peer-reviewed journals and congresses. Scopus covers the areas of natural science, and technical, social and medical sciences. Scopus offers a great deal of search- and refinement options, including citation analysis until 1996. Web of knowledge (Web of science) contains summaries of peer reviewed articles and congress contributions complemented with citation analysis. This allows researchers to track back citations until 1945 (natural sciences) or 1956 (social sciences). The journals included in Web of Knowledge are also known as "ISI journals" and contain an Impact Factor (The Web of Knowledge search engine includes Web of Science search engine together with Journal Citation Reports, also known as List with Impact Factors).

3.1.2 Step 2: Selection of keywords

The second step in the systematic methodology of doing literature reviews is clearly defining the choice for keywords. As can be read in the previous chapters, this research focussed on measuring the satisfaction of Nibag's customers. Some keywords used for this research which addressed this topic are: customer satisfaction AND measurement, determinants AND customer satisfaction, customer satisfaction AND factors. These keywords were all searched within titles of scientific articles. A trial and error search made clear that more suitable literature was found when searching for keywords in titles rather than within titles and abstracts. Customer satisfaction is an aspect which can be used in various types of research areas. A general literature review was conducted. This means that there were no specific journals selected for this research. In both search engines all journals were selected for searching relevant articles. Due to the time limitation of the research not all papers were read and analysed. Only those papers which were found with the selected keywords in the titles were further examined in this literature review. During the literature search it became clear that other keywords also could be relevant within the review. Some of these keywords (in combination with customer satisfaction) were: variables, criteria, attributes etc.

3.1.3 Step 3: Selection based on title and abstract

The next step is clearly defining the selection criteria. The papers which contained the keywords in titles of articles were selected for this research. The papers with an interesting or relevant title and abstract were used in this review. When a paper had no interesting or relevant title or abstract, it was removed and not reviewed. Papers were identified as irrelevant when it contained research which focussed on, for example, organizations which provided digital services. If these papers contained factors which could not be applied in this this research setting, then they were discarded.

3.1.4 Step 4: Forward and backward literature search

Forward and backward searches were also conducted in order to find interesting literature about customer satisfaction. Backward search consists of analysing the interesting papers on their references. Prior work of these interesting papers can also be very valuable for this research. Forward search consists of finding valuable papers which refer to the papers which were found interesting in this literature review.

3.1.5 Step 5: Literature quick scan

When the paper had an interesting title or abstract, it was scanned (the next selection criteria) and reviewed on its suitability. This was done in the literature quick scan. Papers which had factors or determinants etc. which were not usable in this research setting were discarded.

3.1.6 Step 6: Applying additional prioritization criteria

After the literature scan 88 articles remained. In order to create a readable amount of literature papers, some additional criteria were applied. These criteria consisted of recentness (articles from the last five year were included) and times cited (articles cited more than 20 times were included). Based on the factors identified in the literature scan the most interesting and suitable papers were selected. After following all these steps 27 scientific articles remained, from which four were included by forward / backward literature search. These articles were used in this research. A more detailed overview of the literature review and the used keywords can be found in appendix V.

Figure 9 shows the steps taken in the literature review. When during a step articles were identified as not suitable or not interesting, these articles where discarded. The number of articles discarded can be found at the right side of the figure which are indicated with a '-' symbol. The forward and backward literature search added papers and are indicated with a '+' symbol.

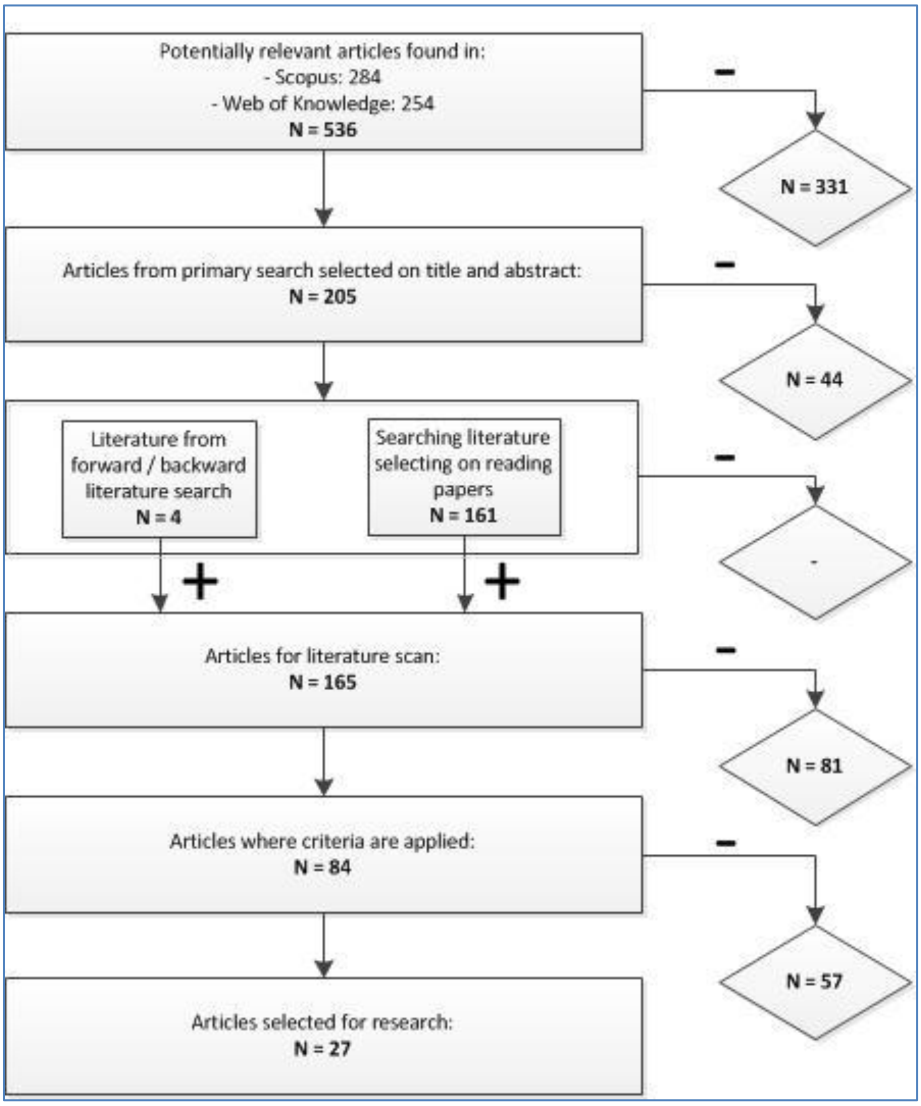

Figure 9: Systematic methodology of the literature review

3.2 Findings

The approach described in section 3.1 has resulted in a literature review consisting of 27 articles. The papers all provided information about important factors for measuring customer satisfaction. This section provides the findings of this literature review.

The 27 articles, which remained after the literature review, addressed 27 different factors used for measuring customer satisfaction. Table 4 contains a matrix with the 27 articles and the factors which they address. Important to notice is the different layers within this matrix. For example, some articles only mention the SERVQUAL dimensions which were developed by Parasuraman et al. (1988). These dimensions are empathy, assurance, tangibles, responsiveness and reliability. Authors who only address these dimensions were Mukhopadhyay, Bandyopadhyay, and Aditya (2011). They did not provide a detailed elaboration on these dimensions. Other authors such as Al-Mutawa, Eldabi, and Brinkman (2006) provided more details on these SERVQUAL dimensions with different items. Al-Mutawa et al. (2006) for example proposed the assurance dimension and operationalized it with items such as ‘knowledge of employees’ and ‘politeness of employees’. Because of the difference on details, both ‘layers’ were included in the matrix to make sure we did not exclude important factors.

Table 4: Matrix of found articles and the factors addressed

	Article	Security	Honesty	Communication	Competency	Reliability	Politeness / contribution	Responsiveness	Friendly behaviour	Commitment	Attention & Surveillance	Accessibility	Cleanness / Tidiness	Flexibility	Price	Attitude	Waiting time	Knowledge & Skills	Information provision	Accuracy	Safety	Empathy	Tangibles	Assurance	Helpfulness	Appearance	Availability	Project Management
1	Al-Mutawa, T., T. Eldabi, et al. (2006).					x	x	x			x				x		x	x		x		x	x	x	x	x	x	
2	Anderson, S., L. K. Pearo, et al. (2008).							x	x				x				x			x					x	x		
3	Anisor, N., D. Adela-Eliza, et al. (2010).			x				x		x		x			x	x												
4	Arbore, A. and B. Busacca (2009).	x		x		x		x	x	x			x				x			x				x	x	x		
5	Bairi, J. and B. M. Manohar (2011).					x										x		x	x									
6	Borjalilu, N., M. Zowghi, et al. (2011).			x							x	x			x				x		x							
7	Burns, R. C., A. R. Graefe, et al. (2003).	x							x			x			x				x	x	x					x	x	
8	Cui, Q. A., X. Wang, et al. (2011).												x		x	x	x	x										
9	Füller, J. and K. Matzler (2008).								x						x				x									
10	Hasin, M. A. A., R. Seeluangsawat, et al. (2001).						x				x		x				x		x						x		x	
11	Kekre, S., M. S. Krishnan, et al. (1995).				x	x													x									
12	Li, D. and R. Yu (2011).			x								x			x		x	x										
13	Matzler, K., E. Sauerwein, et al. (2003).	x	x	x	x	x	x	x				x						x					x					
14	Matzler, K., J. Füller, et al. (2008).				x				x								x				x				x	x		
15	Mihelis, G., E. Grigoroudis, et al. (2001).			x				x	x						x		x	x	x							x		
16	Millán, Á. and A. Esteban (2004).				x		x		x	x	x	x		x			x	x		x						x		
17	Mukhopadhyay, I., S. K. Bandyopadhyay, et al. (2011).					x		x									x					x	x	x				
18	Noyan, F. and G. G. Simsek (2011).								x						x													
19	Park, Y. and S. C. Gates (2009).						x								x		x	x	x	x					x			
20	Siskos, Y., E. Grigoroudis, et al. (1998).								x						x	x			x							x	x	
21	Tang, W. W. and T. T. Zheng (2010).								x				x		x	x	x	x							x			
22	Vazifehdoust, H., M. Ram, et al. (2012).	x	x	x	x	x	x	x	x	x	x	x	x	x														
23	Zhou, L. and Q. Z. Wu (2011).					x			x				x		x		x	x		x	x							
	Back- and forward literature search																											
24	Bearden, Netemeyer & Mobley (1996)				x				x						x		x											
25	Matzler & Sauerwein (2002)				x	x			x			x																x
26	Nelson & Nelson (1995)			x		x		x				x										x	x	x			x	
27	Parasuraman, Zeithaml and Berry (1988)					x		x														x	x	x				

After a more critical analysis on the results of the literature review some factors were discarded. Cleanness/tidiness is an important factor for customer satisfaction in the retail industry (W. W. Tang & Zheng, 2010; Zhou & Wu, 2011). For Nibag, which provides professional service on housing management, the factor cleanness/tidiness is not important. Nibag sometimes receives customers in their office building. The office building is always tidy and everyday it is cleaned. Some customers will not perceive the cleanness/tidiness of the office building differently than other customers. All customers will indicate that Nibag is clean and tidy and so this factor was not interesting for Nibag and therefore not interesting for this research. Other factors which were not interesting for Nibag and this research were security and safety. When customers acquire services from Nibag, security or safety related issues are not present. Nibag does not provide products which are dangerous or unsafe for customers. Nibag provides advice on housing management. Customers take risks when they acquire knowledge or services from external parties, but these 'business' risks are not meant by security or safety issues. After discarding the irrelevant factors, the following factors remained:

Table 5: Overview of the selected factors after the critical analysis

Factors
Honesty
Communication
Competency
Reliability
Politeness
Responsiveness
Friendly behaviour
Commitment
Attention
Accessibility
Flexibility
Price
Attitude
Waiting time
Knowledge & Skills
Information provision
Accuracy
Empathy
Tangibles
Assurance
Helpfulness
Appearance
Availability
Project management

3.3 Definitions

Some of the factors, identified by the literature review, were closely related. This means that some factors can be grouped together, representing a comprehensive measurable factor. The grouping was mainly based on the definitions provided by Parasuraman et al. (1988) and Johnston (1995). The definitions of the factors are presented in the context of this research.

3.3.1 Reliability

The reliability group consist of reliability itself and accuracy. It is important for organizations to be reliable and accurate towards their customers. Meeting the requirements set by the customers is crucial for business. Parasuraman et al. (1988) define reliability as "the ability to perform the promised service dependably and accurately". Therefore accuracy was included in this group.

Each customer is different, so therefore each project is different. Customers can require different aspects from organizations. For organizations it is key to meet these requirements. Organizations are reliable when they meet the requirements of customers. Each customer can value the level of reliability differently, so therefore the reliability factor is interesting for this research.

Definition of Reliability: "the ability to perform the promised service dependably and accurately".

3.3.2 Responsiveness

The factor group responsiveness consists of responsiveness itself, helpfulness, waiting time and availability. Especially for service companies the availability of the organization and responding towards their customer is very important. Parasuraman et al. (1988) define responsiveness as "the willingness to help customers and provide prompt service". This is why helpfulness was included in this group. Providing prompt service is the reason why availability and waiting time were also included in this group.

Each customer requires different levels of responsiveness. Some customers are discontent when they are not immediately helped, where other customers do not mind if they have to wait one or two hours (or days depending on the help needed). This factor is interesting for this research because it is likely that customer perceive the level of responsiveness, helpfulness and availability differently.

Definition of Responsiveness: "the willingness to help customers and provide prompt service".

3.3.3 Competency

The factor group competency consists of competency itself, skills and knowledge. Parasuraman et al. (1988) define competency as "possession of required skill and knowledge to perform services". Johnston (1995) defines competency as "the skill, expertise and professionalism with which the service is executed. This includes the carrying out of correct procedures, correct execution of customer instructions, degree of product or service knowledge exhibited by contact staff, the rendering of good, sound advice and the general ability to do a good job". Skills and knowledge were therefore included in the competency group.

One can imagine that customers want to receive service provided by competent people. These people can provide better services because they have the right knowledge to understand the 'problem' and the right skills to provide a solution for this problem. For every project different knowledge and skills are needed, these competences can be perceived differently by customers. This is why this factor was interesting for this research.

Definition of Competency: "the skill, expertise and professionalism with which the service is executed. This includes the carrying out of correct procedures, correct execution of customer instructions, degree of product or service knowledge exhibited by contact staff, the rendering of good, sound advice and the general ability to do a good job".

3.3.4 Empathy

The factor group empathy consists of empathy itself, attention and commitment. Parasuraman et al. (1988) define empathy as "the firm provides care and individualized attention to its customers". This was why attention is included in the empathy group. Providing care to its customers means that a company commits itself to this company-customer relationship. Therefore commitment was included in the empathy group. Thomassen (2007) state that the organization should be able to emphasize with the situation of the customer to know their needs and then take these needs into account.

It is imaginable that when customers want to obtain services from an organization, that this organization gives the customer the required attention. For customers it is also important that an organization commits itself and that they want to provide good services. It is likely that the level of attention and commitment is perceived differently by customers; therefore this factor is interesting for this research.

Definition of Empathy: "providing care and individualized attention to its customers and empathize with the situation of these customers so their needs can be taken into account".

3.3.5 Assurance

The factor group assurance consists of assurance itself, honesty, friendliness and politeness. Parasuraman et al. (1988) define assurance as "knowledge and courtesy of employees and their ability to inspire trust and confidence". Trust and confidence can only be built when an organization is honest with their customers. Therefore honesty was included in this group. The authors define courtesy as "politeness, respect, consideration and friendliness of contact personnel". This is why politeness and friendliness were both also included in the assurance group.

Within service firms the contact between customers and the organization is very important. For employees who are directly involved within this interaction it is important to be friendly and polite. Customers also want to feel confident and they want to trust the organization. It is likely that customers perceive the contact with organization differently in different situations. This is why this factor is interesting for this research.

Definition of Assurance: "the ability to inspire trust and confidence and the honesty, friendliness, politeness, respect and consideration of contact personnel".

3.3.6 Tangibles

The factor group tangibles consists of tangibles itself and appearance. According to Parasuraman et al. (1988) tangibles is the "appearance of physical facilities, equipment, personnel and communication materials". Therefore appearance factor was included in this group.

Service organizations are often in contact with their customers. It is important for organizations to appear in a suitable way to their customers. In the professional service industry the appearance is very important. Customers expect, in a business-to-business relation with organizations, that organizations appear in proper way. When organizations appear sloppy their customers might question the professionalism of the organization. The appearance of organizations might be perceived differently by customers. This is way this factor is interesting for this research.

Definition of Tangibles: "the appearance of physical facilities, equipment, personnel and communication materials".

3.3.7 Communication

The factor group communication consists of communication itself, information provision and accessibility. Parasuraman et al. (1988) define good communication as "listening to its customers and acknowledging their comments. Keeps customers informed in language they can understand". Johnston (1995) defines communication as "the ability of the service providers to communicate with the customer in a way he or she will understand. This includes the clarity, completeness and accuracy of both verbal and written information communicated to the customer and the ability of staff to listen to and understand the customer." The factor information provision was included in the communication group. Parasuraman et al. (1988) define accessibility as "approachable and easy of contact". Easy of contact is part of the communication. Therefore accessibility was also included in the communication group.

As mentioned earlier, in a service context the contact from organizations with its customers is very important. By listening carefully to its customers, organizations can obtain all the relevant information for providing the right service. For customers it is also important that organizations clearly explain what they are going to do and how they are going to do it. It is likely that customers perceive the level of communication differently with each organization. Therefore it is interesting for this research to include the communication factor.

Definition of Communication: "the ability of the service providers to communicate with the customer in a way he or she will understand. This includes the clarity, completeness and accuracy of both verbal and written information communicated to the customer and the ability of staff to listen to and understand the customer".

3.3.8 Flexibility

Flexibility is the quality of being adaptable or variable. Johnston (1995) states that, within service industries, flexibility consists of the ability to recover from mistakes, to customize the service or add additional services. Johnston (1995) defines flexibility as "a willingness and ability on the part of the service worker to amend or alter the nature of the service or product to meet the needs of the customer"

At the start of a project many decisions are made. During projects many of these decisions change due to other or new requirements from customers. A company which can switch quickly to meet the requirements can be called flexible. Organizations can also be flexible when they are able to recover from mistakes or can customize services.

Definition of Flexibility: "the willingness and ability on the part of the service worker to amend or alter the nature of the service or product to meet the needs of the customer".

3.3.9 Price

Price is the quantity of payment or compensations given by one party to another in return for goods or services. Customers always want to pay the lowest price for a product or service. Customers are willingly to pay more for products which are of high quality. This is also the case when services can be provided which exactly meet their requirements. If one half of the service is delivered and the other half not, then customers do not want to pay the full amount. It is therefore likely that customers perceive the price for a certain service differently than other customers do. This is way the price factor was interesting for this research. Thomassen (2007) divides price in several aspects. Some of these aspects are: price-quality ratio, the actual price and pricing policy (the way the price is established).

Definition of Price: "the quantity of payment or compensations given by one party to another in return for goods or services".

3.3.10 Project management

Project management consists of controlling projects. It is the way in which projects are monitored & controlled, prepared, planned, executed and finished. Good collaboration and management makes successful accomplishing projects possible. IEEE (2008) defines project management as "the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. This application of knowledge requires the effective management of appropriate processes." IEEE addresses five different processes within project management. These processes are:

- Initiating process. This process consists of the defining the scope, committing of financial resources, identification of stakeholders, assigning project managers.
- Planning process. This process consists of managing the planning of time, cost, quality, human resources, communication, risks, procurement and scope.
- Executing process. This process consists of coordinating people and resources, as well as integrating and performing the activities of the project in accordance with the planning of the project.
- Monitoring & controlling process. This process consists of those processes required to track, review and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.
- Closing process. This process consists of those processes performed to finalize all activities across the initiation, planning, execution and monitoring & controlling processes to complete the project. In this process it is verified that the defined processes are completed within the four processes to close the project, as appropriate, and formally establishes that the project is complete (IEEE, 2008)

Projects in which organizations and customers are participating can differ in time, budget etc. For every organization the monitoring & controlling, preparing, planning, executing and finishing of project are very important. With these steps the collaboration with the customer is crucial. It is imaginable that project management is perceived differently by customers. This factor was therefore indicated as interesting for this research.

Definition of Project management: "the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. This application of knowledge requires the effective management of appropriate processes".

3.3.11 Attitude

Attitude is a predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation. Attitude influences an individual's choice of action, and responses to challenges, incentives, and rewards (stimuli). Organizations which provide professional service are often in contact with their customers. It is therefore important that organizations have a good attitude towards their customers. Attitude can be interpreted in different ways. Attitude can be grouped under the assurance factor, because the attitude of an organization can be friendly or unfriendly towards customers. Attitude can also be grouped under the empathy factor. Organizations can be very committed towards customers, but they can also pay little attention towards their customers. W. W. Tang and Zheng (2010) propose several factors and their items. The authors identify the service factor and operationalize them with several items. One of these items is friendly and trustworthy attitude. Zhou and Wu (2011) also identify a related item: friendly service attitude. Based on these articles attitude was grouped under assurance.

Definition of Attitude: "the tendency to respond positively or negatively towards a certain idea, person, object or situation".

3.4 Concluding remarks

This chapter described the systematic literature review which was conducted to investigate factors which were identified for customer satisfaction measurement by literature. The literature review was based on a systematic methodology proposed by Moody and Mueller (2009). The literature review resulted in 27 suitable articles which identified customer satisfaction factors. After critically analysing the factors several factors were indicated as unsuitable and were discarded from the list. Some factors were closely related to each other and therefore were grouped together. This was done because some factors could be considered as a part of another factor based on definitions from literature. An example is responsiveness, which is defined as "the willingness to help customers and provide prompt service". Items such as waiting time and helpfulness are therefore seen as part of the responsiveness factor. The definitions from literature contained several items which were used in defining the factors. The final list of factors contained ten customer satisfaction factors. The factors shall be used in the workshop and interviews which are described in the next chapter. Table 6 contains the identified factors.

Table 6: Final list of customer satisfaction factors

(Grouped) Factors	Items
Reliability	Reliability Accuracy
Responsiveness	Responsiveness Helpfulness Waiting time Availability
Empathy	Empathy Attention Commitment
Tangibles	Tangibles Appearance
Assurance	Assurance Honesty Friendliness Politeness Attitude

Competency	Competence Knowledge & Skills
Communication	Communication Information provision Accessibility
Flexibility	-
Price	-
Project management	-

4 Instrument design

This chapter describes the instrument design used in this research. First of all the research methods (workshops and interviews) are elaborated in section 4.1. Section 4.2 describes the findings of these research methods. The comparison of the findings is addressed in section 4.3. The selection and operationalization of factors is described in section 4.4. This chapter finishes with concluding remarks about the comparison in relation with this research in section 4.5.

4.1 Research method

This section describes the research methods used for the instrument design. Workshops were held within Nibag and interviews were held with customers of Nibag to identify relevant factors which should be used to measure customer satisfaction. The approach which was used for selecting the relevant factors for the instrument is shown in figure 10. Chapter three provided the factors which were identified by literature as relevant for measuring customer satisfaction. In the workshops (addressed in section 4.1.1), employees from Nibag were asked to identify factors which, in their experience, were relevant for measuring customer satisfaction. In the interviews these people were also asked to review the identified factors by literature on relevance. The own identification of factors and the review of factors from literature resulted in one list of relevant factors. These factors were ranked on importance, which resulted in a ranked list of relevant factors. The same approach was used in the interviews with customers of Nibag (addressed in section 4.1.2). Own factors were identified and factors from literature were reviewed by employees and customers of Nibag. This eventually also resulted in a ranked list of relevant factors.

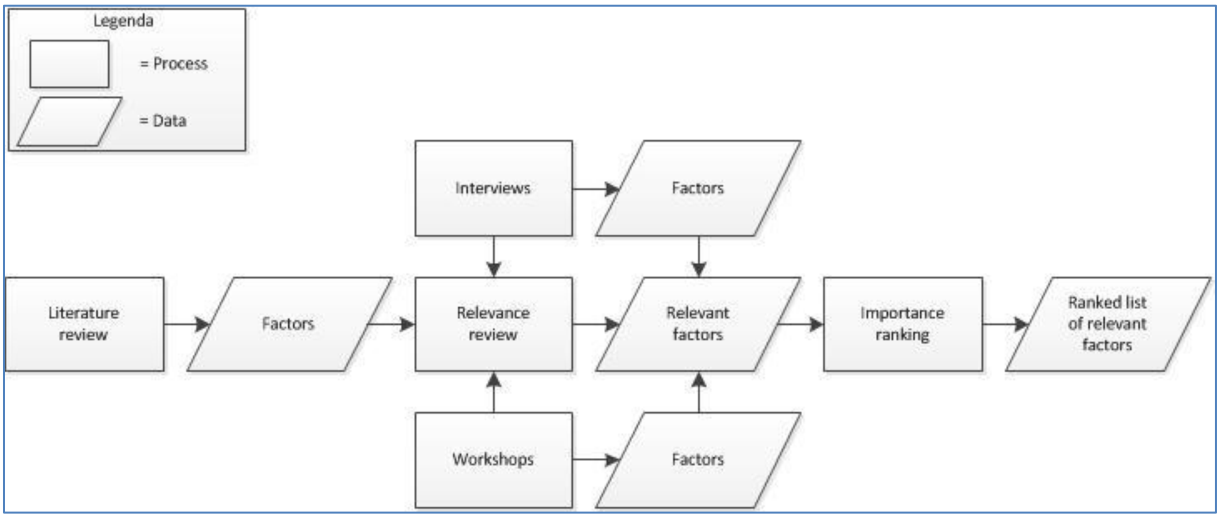

Figure 10: Research approach for the instrument design

4.1.1 Workshops (with employees from Nibag)

This section addresses the workshops which were held with employees of Nibag. A workshop is an activity of one or more days in which participants gain knowledge about subject of the workshop. The workshop in this research however was designed in order to obtain, in a creative way, knowledge and ideas from practice. Nibag employees were invited to the workshop to provide their ideas and knowledge about factors which satisfy customers. The goal of the workshop was to identify the most important factors of customer satisfaction from the experience of Nibag's project leaders in practice and to validate factors from literature. The participants of the workshops had different roles within Nibag. Figure 11 and 12 address the difference in participants. The workshop in Oldenzaal was held on 29 October and the workshop in Uden was held on 9 November.

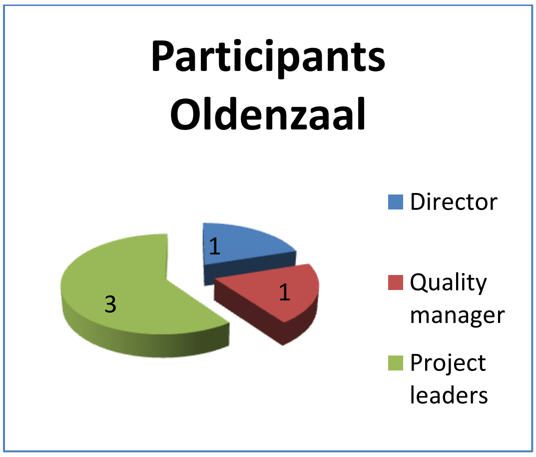

Figure 11: Workshop Oldenzaal participants overview

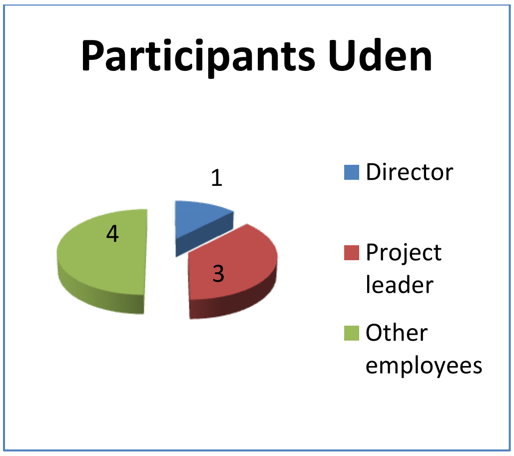

Figure 12: Workshop Uden participants overview

The workshops started with an introduction in order to make the participants feel comfortable and to introduce the topic of the workshop. In the first part of the workshop the participants identified the customer satisfaction factors which, from their experience, should be measured. In the second part of the workshop factors, identified by literature, were reviewed on relevance. The relevant factors from literature together with the identified factors from part one were ranked on importance. A more detailed description of the workshop can be found in appendix VI.

4.1.2 Interviews (with customers of Nibag)

This section describes the interviews which were held with customers of Nibag. An interview is a conversation in which one or more persons are questioned by another person or persons. It is a method for one person in order to systematically gain knowledge from another person. The interview in this research was designed to acquire the customer's point of view on the measurement of customer satisfaction. The goal of the interview was to identify the important satisfaction factors from the customer's point of view and validating factors identified by literature. Customers from different departments were selected for the interviews, in order to increase the generalizability of the instrument in practice. Five customers, from four different departments, were interviewed by the researcher. The interviews were separately conducted from 7 to 19 November 2012. An overview of the departments and the customers interviewed can be found in Table 7.

Table 7: Overview of departments and customers interviewed in this research

Department	Customers
Monuments care / redevelopment	Customer A
MJOP	Customer B
BPM	Customer C
Sound	Customer D
MJOP	Customer E

The approach which was used in the workshops was also used in the interviews. First the customers were asked to identify the factors which satisfy them when doing business with companies like Nibag. Next to that the customers were asked to review the factors, identified by literature, on relevance. This list of factors together with the factors identified in the first part was ranked on importance. A more detailed description can be found in appendix VII.

4.2 Findings

This section addresses the findings which were obtained during the workshops and interviews. First the findings from the workshops are addressed in section 4.2.1. The findings from the interviews are addressed in section 4.2.2.

4.2.1 Findings from workshops

The results from the workshop in Oldenzaal and the workshop in Uden were aggregated in order to represent Nibag as one company. The next table contains the factors identified by Nibag compared with the factors identified by the literature. The first column contains the factors identified by literature. Behind these factors, between brackets, factors identified by Nibag are mentioned when they relate to the factor identified by literature. The second column contains the factors which are mentioned by literature, but not mentioned by Nibag. The third column indicates if Nibag finds the factors from the second table relevant. The fourth column contains factors which are identified by Nibag and not by literature.

Table 8: Workshop findings

Factors addressed by Nibag and by literature	Factors not mentioned by Nibag, but mentioned by literature	Relevancy of the factors not mentioned by Nibag, but mentioned by literature	Factors mentioned by Nibag and not mentioned by literature
Reliability (reliability, keeping agreements, providing right services)	Competencies	Yes	Being Pro-active of Extra service / provide added value
Responsiveness (short communication lines, one contact person)			
Empathy (personal			

connection, attention)
Tangibles (presentation of product / service)
Assurance (take control in project, create trust with customer)
Communication (communication after project, keep customers informed)
Flexibility (flexibility)
Price (price quality ratio, transparency)
Project management (planning, expectation management)

The relevant factors from table 8 are ranked on importance. The next table contains the importance rankings of the identified relevant factors.

Table 9: Importance ranking by Nibag

Factors	Importance ranking by Nibag	In percentage
Reliability	12	18,46%
Communication	10	15,38%
Price	10	15,38%
Responsiveness	6	9,023%
Project management	6	9,023%
Assurance	6	9,023%
Provide added value*	5	7,7%
Competencies	4	6,15%
Flexibility	4	6,15%
Empathy	2	4,62%
Tangibles	0	0%
Total	65	100%

* The factor ‘provide added value’ contains several elements. These elements are ‘being proactive’, ‘provide extra service’ and ‘taking care of customers after project’ (‘Nazorg’). This is because these three aspects are all types of added value. The importance rankings of these aspects were added together.

A more detailed description of the results from the workshops can be found in appendix VII. This appendix also shows the results of the workshop separately.

4.2.2 Findings from interviews

The results from the interviews were aggregated in order to represent the customers of Nibag as one customer. The next table contains the factors identified by customers compared with the factors identified by the literature. The first column contains the factors identified by literature. Behind these factors, between brackets, factors identified by customers are mentioned when they relate to the factor identified by literature. The second column contains the factors which are mentioned by literature, but not mentioned by customers. The third column indicates if customers find the factors from the second table relevant. The fourth column contains factors which are identified by customers and not by literature.

Table 10: Interview findings

Factors addressed by customer and by literature	Factors not mentioned by customer, but mentioned by literature	Relevancy of the factors not mentioned by customer, but mentioned by literature	Factors mentioned by customer and not mentioned by literature
Reliability (correctness, quality, provide what is agreed on, reliability, correctness, keeping agreements)			Taking care of customers after projects ('Nazorg') Nazorg. An example: The climate control of a school was not working correct. The customer called the responsible person. This person was working twelve days to fix the climate control. The customer of Nibag did not have to pay a thing. This made the customer satisfied.
Responsiveness (quickness, quick response, accessibility, time)			Provide extra service
Communication (clarity, personal contact, keeping each other informed, contact during projects, reaching customers, feedback, completeness)			
Price (price, price-quality ratio, price policy)			
Project management (contact during projects keeping each other informed, planning, closing of projects)			
Assurance (relationship with customers, trust)			

Competencies (knowledge, professionalism)	
Tangibles (appearance of reports)	
Empathy (thinking with customers, show to help them)	
Flexibility (flexibility)	

The relevancy of factors was not included in table 10, because all factors identified by literature were also mentioned by the customers of Nibag. So column two and three remained empty. Concerning relevancy it can be stated that not one factor, identified by literature, was indicated as irrelevant by all five customers. Some factors however were indicated as irrelevant by customers separately. These factors were tangibles (indicated as irrelevant by one customer and indicated as less important by another customer), empathy (indicated as less relevant by one customer) and flexibility (indicated as less relevant by one customer). Because of the fact that not all customers found the same factor irrelevant, all factors were ranked on importance. The next table contains the importance ranking of all relevant factors.

Table 11: Importance ranking by customers of Nibag

Factors	Importance ranking of the five customers	In percentage
Reliability	5	20%
Communication	5	20%
Competencies	4	16%
Project management	4	16%
Price	3	12%
Assurance	2	8%
Responsiveness	1	4%
Empathy	1	4%
Tangibles	-	0%
Flexibility	-	0%
Provide added value	-	0%
Total	25	100%

* *Two extra factors were identified by the customers (taking care of customers after a project and extra service). Both factors were not indicated as the most important factor. The factors were combined together because taking care of customers after a project can be seen as an extra service. Extra service is seen as added value, so therefore the factor is called 'provide added value'.*

A more detailed description of the results from the interviews can be found in appendix IX. This appendix also shows the results of the interviews separately.

4.3 Factors

This section provides comparisons of customer satisfaction factors identified by the three sources (literature, workshops and interviews). The importance of factors, indicated by Nibag and their employees, will also be compared in this section. Based on the findings, addressed in the previous section, comparisons are made and conclusions are drawn. The identified factors and their importance will be used as foundation for the instrument.

4.3.1 Nibag and Literature

Based on the results obtained from the workshops, which can be found in appendix VIII, it can be concluded that factors identified by literature were applicable in practice. The participants in the workshop identified nine of the ten factors identified by literature. The factor competencies was not identified by Nibag, but it was found relevant as a factor which could influence customer satisfaction. One factor was addressed by Nibag which was not found in literature. This factor was 'provide added value' which consists of providing extra service, being proactive and taking care of customers after project. So from Nibag's experience with customers the factors found in literature were all relevant for measuring customer satisfaction, because these factors could influence the satisfaction level of customers.

4.3.2 Nibag's customers and Literature

The results from the interviews conducted with customers of Nibag can be found in appendix IX. Based on these results it can be concluded that, in general, all factors identified by literature were considered relevant for the satisfaction level of Nibag's customers. Table 12 contains an overview of factors which were found irrelevant by the customer. This table shows the service, the factor and the reasoning about why the factor was found irrelevant.

Table 12: Overview of factors which were found irrelevant by customers

Service	Factor	Reasoning
Monuments care & redevelopment	Tangibles	The customer stated that he was interested in the content of a service and not in the appearance of a service. So the appearance of personnel or documents was not interesting for this customer
BPM	Tangibles	The customer stated that he wants to receive documents with qualitative content and that it does not matter if it was not presented in a fancy way.
Sound	Flexibility	The customer stated that if he had to change something in a project, then the organization asked for more money because he had to do more work. Therefore flexibility was found less relevant
MJOP	Empathy	The customer stated that the organization has to provide solutions to him as a customer. This was more important than knowing that an organization empathized with him*

**The other customer of MJOP department however indicated that the empathy factor was relevant for him. The contact and personal connection were important for this customer.*

When we look at the results from the perspective of Nibag itself and not per department it can be concluded that not one factor, which was identified by literature, was found irrelevant by all customers. This means that all factors could be used in the measurement of customer satisfaction.

Two additional factors where identified by the customers of Nibag which were not identified by literature. These two factors were taking care of customers after projects ('Nazorg' in Dutch) and providing extra service. In this research these two factors were combined to 'provide added value, because taking care of customers after a project can be seen as extra service which can result in added value.

4.3.3 Nibag and customers of Nibag

When we look at the results from the workshops and interviews it can be concluded that both sides find all factors, which were identified by literature, relevant as factors which can influence the satisfaction level of customers. Remarkable to see was that both Nibag and their customers identified an additional factor which was not identified by literature. This factor was providing added value. Providing extra service can be seen as added value which is provided from the organization to the customer. Taking care of customers after projects ('Nazorg') is also placed among extra service. This extra service is not agreed upon in a contract, but comes from the organization itself.

4.3.4 Importance of factors by Nibag and customers of Nibag

The results of the importance ranking by Nibag and their customers are shown in respectively table 9 and table 11. The importance ranking of factors by Nibag is done by thirteen people. The importance ranking of factors by customers is done by five people. The first column contains the different factors. The second column contains the number of 'votes' for these factors. The number of votes per factor are recalculated to percentages in order to make the comparisons easier.

The two tables show the importance of factors indicated by Nibag (Table 9) and their customers (Table 11). Important to keep in mind is the difference in numbers of participants. Within Nibag thirteen people ranked the importance of factors, where among customers five persons ranked the factors on importance. By recalculating the ranking into percentages, the difference of the number of participants was tried to be reduced. The percentages were used for the comparison of these tables. By comparing these tables it can be concluded if Nibag knows which factors are most important for customers. The following similarities can be found:

- Reliability is indicated as most important by both Nibag and their customers (18% and 20%).
- Communication is indicated as a very important factor by both Nibag and their customers (15% and 20%)
- Price is indicated by Nibag and their customers (although in a lesser extent) as an important factor (15% and 12%)
- Empathy is placed at the bottom of the ranking lists of both Nibag and their customers (5% and 4%).
- Tangibles is not indicated as (most) important by both Nibag and their customers (both 0%).
- Assurance is indicated as equally important by Nibag and their customers (9% and 8%)

The following differences can be found:

- Competencies is indicated as important by customers (16%), where Nibag indicates that this factor is less important (6%).
- Flexibility (6%) and provide added value (7%) were indicated as important by Nibag, but the customers did not indicate these factors as most important (0%).

- Project management is indicated by Nibag as less important in comparison with their customers (9% against 16%)

Based on the similarities and differences it can be concluded that Nibag does not have a clear picture of what customers find important. Customers indicate that competencies and project management are important factors for them. Nibag indicated that, in their experience, customer found it less important. Flexibility and provide added value are indicated by Nibag as important, where customers did not indicate these factors among the most important factors. Maybe when more customers were interviewed the results change, but in this research both flexibility and provide added value were found less important.

4.4 Instrument

This section addresses the selection and operationalization of the customer satisfaction factors. The selection of customer satisfaction factors is based on the findings and comparisons in the previous sections. All factors were found relevant and therefore could be used in the instrument. However the quality coordinator indicated that the instrument became too time consuming when all factors were addressed. The importance ranking from Nibag and their customers was used as reasoning for discarding factors. The quality manager indicated that the importance ranking by customers was two times more important than the importance ranking by Nibag. This ratio was used in the normalization of the both importance rankings. Normalization is done in order to be able to compare the importance rankings of Nibag and their customers. The normalization was done by distributing 100 points among the factors based on the importance rankings.

Table 13: Points distributed for normalization based on importance ranking by Nibag

Factors	Importance ranking by Nibag	Points
Reliability	12	18
Communication	10	15
Price	10	15
Responsiveness	6	9
Project management	6	9
Assurance	6	9
Provide added value	5	8
Competencies	4	6
Flexibility	4	6
Empathy	2	5
Tangibles	0	0
Total	65	100

Table 14: Points distributed for normalization based on importance ranking by customers of Nibag

Factors	Importance ranking of the five customers	Points
Reliability	5	20
Communication	5	20
Competencies	4	16
Project management	4	16
Price	3	12

Assurance	2	8
Responsiveness	1	4
Empathy	1	4
Tangibles	-	0
Flexibility	-	0
Provide added value	-	0
Total	25	100

The points distributed by Nibag were given a weight of one and the points distributed by customers were given a weight of two (because the quality manager indicated that the importance ranking by customers was two times more important). Multiplying the number of points with the corresponding weight from both Nibag and customers resulted in a total number of points. The total number of points distributed was 300. By dividing the total number points per factor (from Nibag and the customers) by the total amount of points (300) a percentage is calculated. This percentage addresses the importance of factors by both Nibag and their customers.

Table 15: Normalized scores on the importance of factors

Factor	Points from Nibag	Weight	Points from customers	Weight	Total points	Percentage
Reliability	18	1	20	2	58	19,33%
Communication	15	1	20	2	55	18,33%
Price	15	1	16	2	47	15,67%
Project management	9	1	16	2	41	13,67%
Competencies	6	1	12	2	30	10%
Assurance	9	1	8	2	25	8,33%
Responsiveness	9	1	4	2	17	5,67%
Empathy	5	1	4	2	13	4,33%
Provide added value	8	1	0	2	8	2,67%
Flexibility	6	1	0	2	6	2%
Tangibles	0	1	0	2	0	0%
Total	100		200		300	100%

The quality manager wanted to address only the most important factors because they together addressed around 75% of the total percentage of the importance ranking. The 75%, indicated by the quality manager of Nibag, was used as dividing line between factors which were included and factors which were not included in the instrument. Adding the percentages of the five most important factors (reliability, communication, price, project management and competencies) resulted in a total sum of 77%. In order to measure these five factors, they had to be operationalized. Important to recognize is that the operationalization of factors in this research was mainly based on literature. Moody and Mueller (2009) found in their literature review that existing items and instruments should be used in the operationalization of factors. Literature was therefore used as guideline for operationalizing the factors. The factors reliability was operationalized using a research of Parasuraman et al. (1988). They did extensive research on questions which were suitable for measuring this factor. The factors communication and competencies were operationalized using a research of Johnston (1995). He defined these factors in detail and these definitions were the base for the operationalization. The factor price was addressed by Thomassen (2007). He addressed several aspects of price concerning customer satisfaction. These aspects were used for the operationalization. Factor project management was defined by the IEEE (2008). The IEEE created a guide to project management body of knowledge. This PMBOK® Guide is a recognized standard for the project management profession. It describes established norms, methods, processes, and practices. The processes in project management, defined by IEEE, were used for the operationalization of the project management factor.

All factors were operationalized with questions which could be used for the measurement of customer satisfaction. Table 16 contains the different factors with corresponding items. These items are operationalized with questions. The Dutch translation can be found in appendix X.

Table 16: Operationalization of factors

Construct	Items	Operationalization
Reliability	Reliability Accuracy	- When employees of Nibag promise to do something by a certain time, they do so (Parasuraman et al., 1988) - When you have problems, employees of Nibag are sympathetic and reassuring (Parasuraman et al., 1988) - Employees of Nibag keep their records accurately (Parasuraman et al., 1988) - Employees of Nibag are dependable (Parasuraman et al., 1988)
Competencies	Competencies Knowledge Skills	- Employees of Nibag have adequate knowledge to provide good services (Johnston, 1995) - Employees of Nibag have adequate skills to provide good services (Johnston, 1995) - Employees of Nibag have enough professionalism to provide good services (Johnston, 1995)
Communication	Communication Information provision Accessibility	- Employees of Nibag are clear in their communication (Johnston, 1995) - Employees of Nibag are complete in their communication (Johnston, 1995) - Employees of Nibag listen and understand you as a customer (Johnston, 1995) - Employees of Nibag are easily accessible (Johnston, 1995) - Employees of Nibag keeps you informed about the progress / delivery of services (Johnston, 1995)
Price	Price-quality Actual price Price policy	- The price-quality ratio of the delivered services is good (Thomassen, 2007) - Nibag is cheap in comparison with

	(transparency)	other organizations (Thomassen, 2007) - The prices which are used by Nibag are well founded (Thomassen, 2007)
Project management	Monitoring & controlling Initiation Planning Execution Closing	- Projects are well initiated by employees of Nibag (IEEE, 2008) - Projects are well planned by employees of Nibag (IEEE, 2008) - Projects are well executed by employees of Nibag (IEEE, 2008) - Projects are well monitored and controlled by employees of Nibag (IEEE, 2008) - After projects finished, employees of Nibag take care for their customers ('Nazorg' in Dutch) (IEEE, 2008)

The questions need to be answered by using a Likert scale. This scale contains five different values ranging from 1 till 5. After each question the customer can provide its opinion by choosing one of the five numbers. If a customer strongly agrees with a question, then number 1 has to be chosen. When a customer strongly disagrees with a question, then number 5 has to be chosen.

4.5 Concluding remarks

In this chapter the design of workshops and interviews were addressed. Both were conducted in practice and results were obtained. These results were compared with each other and based on these comparisons conclusions were drawn. This section addresses these conclusions.

First of all it can be concluded that factors from literature are relevant according to practice (Nibag and its customers). From Nibag's experience all factors from literature could influence customer satisfaction and therefore were all found relevant. In general all factors identified by literature were also found relevant by customers of Nibag. Some customers of different departments found one factor less or not relevant, but this factor was found relevant by the other customers.

Second it can be concluded that Nibag has a clear picture of which factors influence the satisfaction level of their customers. Nibag stated that 'extra service' was an additional factor which has influence on customer satisfaction. From the conducted interviews it became clear that customers also identified 'extra service' as additional factor.

As a third it can be concluded that the importance ranking from Nibag differs from the importance ranking by customers of Nibag. Factors like competencies and project management were indicated by customers as important, where Nibag indicated as less important. The other way around: flexibility and provide added value were indicated as important by Nibag, but their customers indicate that they were less important. The other factors however where found equally important.

Fourth it can be concluded that all factors could be used in the instrument. Based on the comparisons all factors could be included in the instrument, because they were all indicated as relevant. The factor 'provided added value, which was identified by both Nibag and customers of Nibag, is also selected for customer satisfaction measurement. This factor is operationalized at the project management factor as 'Nazorg'.

From the relevant factors, five factors were eventually selected to be used in this research.

This selection was done based on the importance rankings from Nibag and their customers. The five factors were reliability, communication, competencies, price and project management. These factors were operationalized using definitions and descriptions from literature. This chapter will be used as base for the data collection which is addressed in the next chapter.

5 Data collection

This chapter will describe the data collection of this research. Section 5.1 contains the selection of the research method used for the collection of data. Section 5.2 addresses the sample used for this research. How this sample is approached is elaborated in section 5.3. Section 5.4 addresses the validity. The findings from the data collection are described in section 5.5. Conclusions and concluding remarks will be given in section 5.6.

5.1 Research method

In this section the selection of the research method, the instrument type and the instrument application is described. First a suitable research method was selected. Two scientists did a literature search on research methods. The results of this research were used for the selection of the research method. Next to that the most suitable instrument type for this research method was selected. This selection was based on literature search. Next to that the most suitable application for the selected instrument type was selected. This selection was based on an internet search.

5.1.1 Research method selection

There are many methods which could be used for research in different fields. Moody and Mueller (2009) conducted a literature search and found five different research methods (which are often used in social sciences). These research methods are: non-reactive research, action research, case study research, experiment research and survey research. These research methods, with their advantages, disadvantages and usage are described in detail in appendix XI. Based on this information a suitable instrument for measuring the satisfaction of Nibag's customers was selected.

The non-reactive research method can be used in order to observe the behaviour of people who do not know that they are being observed. Due to the time limit of this research and time limitations of Nibag's employees non-reactive research is neither possible nor suitable.

Action research is a research method in which researchers work with practitioners to test and refine research ideas designed to solve practical problems. This research method is neither possible nor suitable due to money and time limitations. The customers of Nibag do not have time to be observed. Also Nibag does not have the time and money to work with their customers and adjusting Nibag's way of working when necessary.

A case study research method is used for in-depth investigation of some real life phenomena in a natural setting. Nibag wants to measure their customer satisfaction at several moments in time. A case study can only be used once: it is hard to replicate, so therefore the case study method is not suitable for this research.

An experiment research method is used to examine the effect of one or more independent variables on one or more dependent variables. It is hard to find participants for these experiments. Customers have limit time and it's costly to involve them in an experiment. Next to that, each customer is different and experiences customer satisfaction in different ways. It is of value when Nibag knows how they should deal with certain customers, but trying different approaches is a costly and time consuming way.

The survey research method can be used as an analysis of practices, situations or attitudes at a point in time. Information, from a population, can be gathered in an efficient way. The response rates and time delays however can be seen as disadvantages of a survey.

Keeping future data collection in mind, customer satisfaction should be measured in a quick and comprehensive way. The same measurements should be conducted in several moments in time. An instrument which easily can be applied and which is not time consuming could help Nibag with measuring their customer satisfaction. From the analysis described above the most suitable measure instrument is selected. For this research a survey will be used. The same survey can be used at different moments in times and allows the researcher to collect data from a population (in this case measuring customer satisfaction from Nibag's customer). Next to that, customer satisfaction data from different moments in time can easily be compared with each other.

5.1.2 Instrument type selection

There are several types of surveys. The most known surveys are self-administered, telephone and face-to-face interview surveys. Detailed information about these types of surveys is provided in appendix XII. Based on the information in appendix H the type of survey is selected for this research. The type of survey which will be used is the web-based survey. This survey is cost effective, fast and avoids interviewer bias. The disadvantages of web-based surveys, low response rates and time delays, need to be kept in mind. Moody and Mueller (2009) state that up to 38% of the people refuse to participate in surveys. A response rate less than 50% is poor and a response rate of more than 70% is good. Moody and Mueller (2009) also state that most IS surveys have a response rate below 20%. By designing a catchy introducing story about the survey the response rate is tried to be increased. The purpose of the survey is to improve the service quality of Nibag. This will be included in the introducing story. In order to prevent this research from time delays the invitations will be sent directly after the survey is finished. In this way there will be sufficient time to wait on the responses and analysing the results. About a week after sending the invitations, a reminder will be sent to the customers who did not filled out the survey. In this reminder the surveyed person is kindly asked to please fill out the survey. Again the importance of the survey will be addressed for them as customers. In this way the time delays are tried to be diminished and the response rate is tried to be increased.

5.1.3 Application selection

Due to time limitation and lack of sufficient expertise the application of a web-based survey application is not developed by the researcher himself. Several good survey applications are already available through the World Wide Web. This section focuses on selecting a suitable web-based survey application for this research. Important for selecting the right survey application is:

- the development of the survey with the application,
- the usage of the application in conducting online surveys with customers and
- the analysis of results of the survey with the application.

Each survey application has its own characteristics. Examples of web-based survey applications are Surveymonkey, SurveyGizmo, Limesurvey and Sogosurvey. Detailed description of the selection of web-based application can be found in appendix XIII.

Trial versions of different survey applications were obtained to try the usage of the application. Based on these trial versions and the three criteria, the selection for an application was made. SurveyGizmo was selected as web-based survey application for this research. SurveyGizmo is a tool for marketers, consultants and business professionals. SurveyGizmo showed a clear structure of the survey. Questions could easily be added or removed using a drag and drop function. Using the preview function a detailed display of the survey was given. The designer could immediately check if the layout met the requirements.

5.2 Sample

The sample selected for this research consists of customers of Nibag. Almost all customers who had received services from Nibag in the previous year or were still receiving services were selected for this research. This resulted in a list of customers who had obtained one or more services from different departments of Nibag. This list was reviewed by the quality coordinator to make sure that only customers, who actually received services or were still receiving services, remained. In total 110 customers, from different departments of Nibag, were asked to fill out the survey.

5.3 Approach

This section describes the approach which was chosen for the data collection in this research. After the list of customers was determined, email addresses were obtained. After all e-mail addresses were obtained the customers were invited to fill out the survey. This invitation was done by sending the customers an e-mail which addressed the goal and length of the survey. Next to that this e-mail addressed the benefits for them as customers when they filled out the survey. The invitation was also made as personal as possible. The invitation e-mail closed with expressing the appreciation when customers cooperated. The customers were first invited to fill out the survey on 7 December 2012. About a week later, 39 people filled out the survey. Another e-mail was sent to remind the other customers to fill out the survey. By stating the response rate so far and expressing the benefits of filling out the survey for them as customers the response rate was tried to be increased. The survey results were collected from 7 to 21 December 2012. In the end 58 customers filled out the survey which is a response rate of 53%. The e-mail containing the invitation and the survey can be found in appendix XIV.

5.4 Validation

Validation is an important part of the development of an instrument. Burton and Mazerolle (2011) conducted a research about principles of survey instrument development and validation in athletic training education research. In their article the authors state that reliability and validity are necessary entities of instrument development. Reliability refers to the consistency or repeatability of a test or measurement. Validity refers to the degree that an instrument actually measures what it is designed or intended to measure. Common procedures for establishing the validity of an instrument are face validity, content validity, criterion validity and construct validity. Table 17 contains the common procedures, their description and purpose.

Table 17: Overview of validation types (Burton & Mazerolle, 2011)

Type	Description	Purpose
Face	Evaluation of an instrument's appearance by a group of experts and/or potential participants.	Establishing an instrument's ease of use, clarity, and readability
Content	Evaluation of an instrument's representativeness of the topic to be studied by a group of experts.	Establishing an instrument's credibility, accuracy, relevance, and breadth of knowledge regarding the domain
Criterion	Evaluation of an instrument's	Establishing an instrument's selection over

	correlation to another that is deemed unquestionable or identified as the gold standard.	another or establishing the predictability of the measure for a future criterion.
Construct	Evaluation of an instrument's ability to relate to other variables or the degree to which it follows a pattern predicted by a theory.	Establishing an instrument's ability to evaluate the construct it was developed to measure.

Face and content validity are qualitative measures of validity and are often employed in survey research because they are the easiest to ascertain (Netemeyer, Bearden, & Sharma, 2003). A panel of experts secure the face and content validity. This panel judges the survey's appearance, relevance and representativeness of its elements (Netemeyer et al., 2003). The panel of experts is comprised of individuals with expertise in the area where the instrument will be applied. These people have the knowledge to review the instrument on validity. Face and content validity are important first steps with establishing construct validity because they establish the accuracy and connection among the questions asked and variables measured (Burton & Mazerolle, 2011). Before quantitative analyses can be used, researchers must establish the instrument's criterion-related validity and construct validity. Criterion-related validity testing demonstrates the accuracy of the measure by comparing it to a previously established and valid instrument or some other external criterion (Netemeyer et al., 2003). Construct validity is the degree to which an operational measure correlates with the theoretical concept investigated. It also provides the researcher with confidence that a survey actually measures what it is intended to measure (Burton & Mazerolle, 2011). This research focuses on the qualitative analysis, so therefore only face validity and content validity are addressed. The other two types of validity (criterion and construct validity) are more applicable when quantitative analyses need to be performed, so therefore they are not addressed in this research.

In this research an instrument for measuring customer satisfaction is designed. Validation is an important step in the design of the instrument. Not only the tool itself, but also the content needs to be validated to ensure that the instrument is applicable in practice. The tool itself can be validated by face validity, where the content of the tool can be validated by content validity. The following sections address both face- and content validity.

5.4.1 Face validity

As mentioned in Table 17 face validity contains the evaluation of an instrument's appearance by a group of experts and/or potential participants. Next to that, face validity is important because factors (and the corresponding operationalization) are translated from English into Dutch. The evaluation of the instrument appearance and translation, to ensure face validity, was conducted using an open interview. Employees of Nibag were used as experts in this validation, because they were able to indicate whether or not the appearance of the instrument was suitable for this research. These experts were also asked to focus on clarity and readability. The experts were selected based on the list of customers which were asked to fill out the survey. The selected experts have the same age, background, knowledge and/or education and therefore are representative for the selected customers. The experts consisted of the quality manager, an employee with college education in engineering ('HBO Bouwkunde' in Dutch), an employee with vocational education in engineering ('MBO Bouwkunde' in Dutch), one employee with an academic education in communication sciences and one employee with academic education in industrial engineering and management. This expert group validates the instrument from an engineering and non-engineering perspective. The instrument is also validated from different education levels. Involving the quality manager ensures the validation from a quality perspective. The selected people are representative for the surveyed population. By selecting these people the instrument is validated from different perspectives, which increases the validity of the instrument.

The expert reviewed the instrument and proposed some improvements. The most important comments concerning face validity were:

- Use only 'B.V.' after the first 'Nibag' word. Discard the 'B.V. part' after all other 'Nibag' words, this increases the readability.
- Change the spelling and grammatical errors, this increases the readability.
- Some definitions need to be made more concrete in order to increase the clarity of the survey.
- Some questions are too vague. They should be made more concrete in order to increase the clarity.
- Some questions are indicated as the same. One question should be discarded or the questions should be reformulated in order to increase the clarity.
- There are too many questions. Discarding questions ensures that the survey stays clear.

5.4.2 Content validity

As mentioned in Table 17 content validity contains the evaluation of an instrument's representativeness of the topic to be studied by a group of experts. An independent organization, which is certified to provide organizations with the ISO 9001:2008 certificate, checked Nibag's quality management system in July 2012. He stated that the measurement of customer satisfaction needs to be very structured. Just measuring how satisfied customers are, is not sufficient enough. The organization has to gain suitable information from the measurements in order to improve the quality of the organization. The quality coordinator can act as an expert in validating the content of the instrument. The quality coordinator monitors the quality management system and therefore has suitable knowledge to validate if the design and content of the instrument helps improving the quality of the organization.

The evaluation of the instrument content was conducted using an open interview. The instrument together with its content was presented to the same expert group as mentioned in the previous section. Two of them were present during the process of checking the ISO 9001:2008 certification within Nibag in July 2012. They therefore have knowledge about the quality management system. The other experts have experience with customers or developing surveys and are therefore used as experts. The expert group was first told to keep in mind that the answers of the instrument should help Nibag with improving the quality of the organization. The expert group was then asked to critically look at the questions and the answer possibilities. Each comment and observation was carefully processed by the researcher, because it could be relevant for improving the instrument. The most important comments made by the expert group were:

- The language used in the survey is too 'simple'. More professional questions should be used (Nibag delivers professional services) in order to increase credibility.

- All questions are asked in positive tens. Some questions should be asked in a 'negative way', in order to increase the validity. When there is a mix between positive and negative questions, customers of Nibag have to really read the questions and not just crossing boxes.
- Some questions should be discarded, because they are not applicable in the context of Nibag. This increases the relevance of the survey.

Appendix XIV contains the e-mail with the invitation to fill out the survey and the actual survey with the final factors and questions which were applied in practice. The e-mail with the invitation was send with the survey in order to introduce the research and to increase the response rate.

5.5 Findings

This section addresses the findings after applying the survey in practice. As mentioned section 5.3 110 were asked to fill out the survey. Eventually 58 people actually filled out the survey which is a response rate of 53%.

The 58 respondents are customers of six different departments. There was no customer who received services from the department 'Design advice' (this is because this department is relatively new). Figure 13 and table 18 provide an overview of the distribution of customers per service.

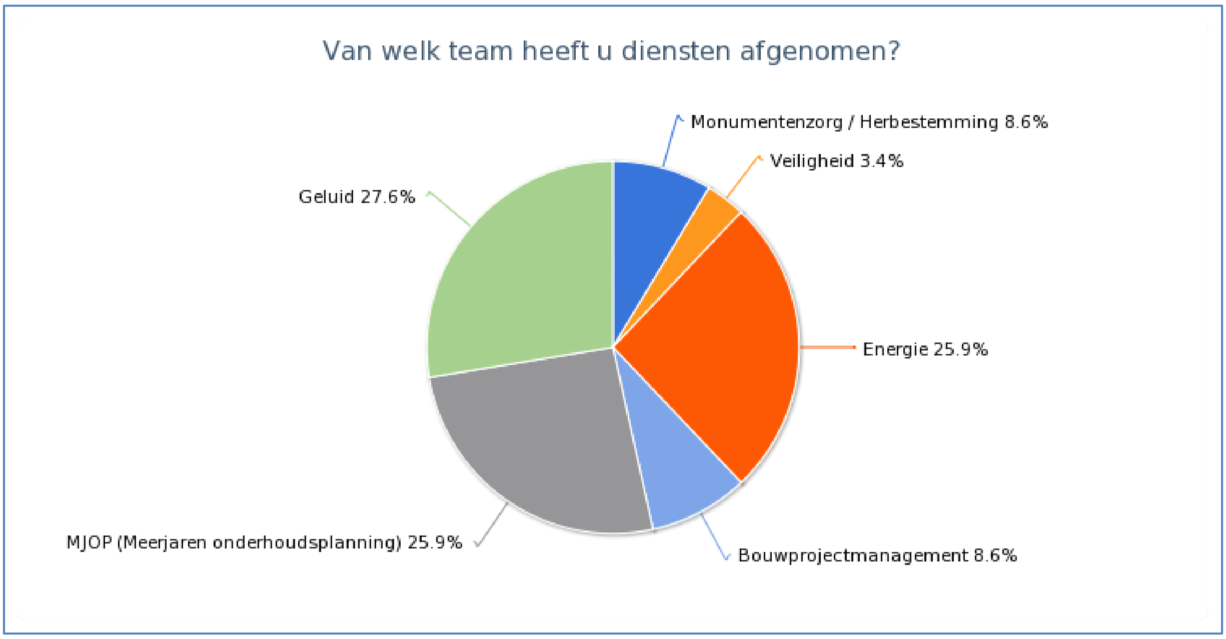

Figure 13: Overview of survey respondents per service

Table 18: Statistics of survey respondents

Value	Count	Percent
Monumentenzorg / Herbestemming	5	8.6%
Veiligheid	2	3.5%
Energie	15	25.9%
Bouwprojectmanagement	5	8.6%
MJOP (Meerjaren onderhoudsplanning)	15	25.9%
Geluid	16	27.6%
Ontwerp advies	0	0.0%
Statistics		

Total Responses	58

The questions were asked using a Likert scale which ranged from 1 till 5. After each question the customer could choose one of the five numbers. If a customer strongly agreed with a question, then number 1 was chosen. When a customer strongly disagreed with a question, then number 5 was chosen. The findings are presented per factor. In the corresponding figures it is showed how the customers score the six different services of Nibag. The numbers on the left side of the figures depict how many customers choose one of the five Likert scale options. A factor was operationalized into multiple questions. Per questions a customer could choose between one of the five Likert scale options. So if only one customer chose strongly disagree at one of the reliability questions, it is shown in the figure. This means that the customer strongly disagrees with one question, he/she does not strongly disagrees about the whole reliability factor.

5.5.1 Reliability

Figure 14 shows how the customers score Nibag on reliability. The scores are divided per service.

–Confidential–

Figure 14: Findings on reliability

5.5.2 Competencies

Figure 15 shows how the customers score Nibag on competencies. The scores are divided per service.

–Confidential–

Figure 15: Findings on competencies

5.5.3 Communication

Figure 16 shows how the customers score Nibag on communication. The scores are divided per service.

–Confidential–

Figure 16: Findings on communication

5.5.4 Price

Figure 17 shows how the customers score Nibag on price. The scores are divided per service.

–Confidential–

Figure 17: Findings on price

5.5.5 Project management

Figure 18 shows how the customers score Nibag on project management. The scores are divided per service.

–Confidential–

Figure 18: Findings on project management

5.5.6 Total customer satisfaction

Figure 19 shows how the customers score Nibag on the five different factors. All customers, of different departments, are included in this figure. The figure shows the number of times when 'zeer eens', 'eens', 'neutraal', 'oneens' or 'zeer oneens' was answered by the customers. Each customer answered 20 questions. Each time a question from a specific factor was answered with, for example, 'eens' then the frequency of 'eens' of this factor was increased with one. This makes it possible that the frequency exceeds the number of customers (which was 58). These scales were selected because it clearly shows, per factor, how customers score Nibag in general.

–Confidential–

Figure 19: Findings on Nibag's customer satisfaction

5.6 Concluding remarks

In this chapter data collection application was selected and applied in practice. First a research method was selected. The most appropriate research method was a survey because it efficiently gathers information from a population at a point in time. There are different types of surveys. The survey type chosen for this research was the web-based survey. This survey is cost effective, fast and avoids interviewer bias. Applying the web-based survey in practice can be done by using different applications. The application selected for this research was SurveyGizmo. This application is good at the development, usage and analysis of the survey. The sample used for the data collection consists of customers of Nibag which had received services in the last year or were still receiving services. The approach how data was collected was described in detail. An invitation e-mail was sent to invite the customers to fill out the survey. After a week a reminder e-mail was sent to increase the response rate. The survey which collected the data was validated. Validation was needed in order to increase the reliability of the survey. The survey and its questions were validated on face- and content validity by an expert group. This expert group consisted of employees of Nibag which had different education, background, age and knowledge which were representative for the selected customers. The findings of the data collection were presented per factor and per service offered by Nibag.
–Confidential–
In order to be able to provide management of Nibag advice on how they could improve their services offered, the findings are analysed more in detail in the next chapter.

6 Analysis

This chapter addresses the analysis of the data which was collected after applying the instrument in a practical context. Section 6.1 describes the selection of boundaries and scales for the IPA method. The tool which is developed for the analysis of data is addressed in section 6.2. The actual analysis is conducted and the results are presented in section 6.3. This chapter ends with concluding remarks which can be found in section 6.4.

6.1 Boundary and scale selection for IPA

Section 2.4 already introduced the analysis method which was selected for this research. The importance-performance analysis method was chosen because it clearly and understandably can show Nibag in which factors they should invest resources and from which factors resources can be diminished. With the IPA method Nibag also clearly sees how they score on the different factors. When the scores on factors are low, Nibag should invest more resources (e.g. time, money, employees etc.) in order to improve these factors. During the interviews the customers had indicated which factors are the most important for them. These results were already addressed in chapter 4. The application of the measurement instrument in practice provided the satisfaction level of customers towards Nibag on these factors. Based on these levels of importance and satisfaction, the different factors are placed in the IPA method. The boundaries were selected based on the results from the importance and satisfaction results. The boundaries divided the matrix into the four quadrants which contained the factors. Section 6.1.1 addresses the importance scale of the IPA and section 6.1.2 addresses the satisfaction scale of the IPA.

6.1.1 Importance scale of the IPA

In the interviews customers of Nibag indicated the importance of customer satisfaction factors. This part was already addressed in section 4.2.2. A brief overview of the factors selected for the survey is provided in table 19. The percentage per factor will be used as the importance scale on the y-axis of the IPA method. The sequence of the most important factors from customers and the sequence of total points are the same (reliability as most important and competencies as least important factor from the five factors). Adding the important points from Nibag resulted in differences between factors but the same importance sequence remains. This is why the total percentage was used as the importance scale in the IPA method. The importance of factors addressed in table 19 was used as the y-axis of the IPA method.

Table 19: Combined importance rankings

Factor	Points from Nibag	Points from customers	Total points	Percentage
Reliability	18	40	58	19,33%
Communication	15	40	55	18,33%
Price	15	32	47	15,67%
Project management	9	32	41	13,67%
Competencies	6	24	30	10%

6.1.2 Satisfaction scale of the IPA

Table 20 contains the average scores from the application of the instrument in practice. This table shows the factors with the corresponding questions. The customer satisfaction level of different questions obtained a score using a Likert scale from 1 to 5. From the questions, which address the same factor, the average was calculated and was presented as the end score. This end score was used as satisfaction rating in the IPA (for Nibag in general).

Table 20: Averages customer satisfaction scores per question and factor

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So the Likert scale averages of the satisfaction measurements per factor are used in the IPA analysis. Alternatives for the use of Likert scale averages are Z-scores and median. The Z-scores show how far a data point is situated from the average (with number of standard deviations used as units). The result of using Z-scores will be that the data points are less situated on the right side of the quadrants, but it will also be harder to compare the measurements at different moments in time, because the average itself can shift. Using the median will result in less sensitive data. This method has also a drawback. The chance is greater that data points will be situated at the same boundary.

The dividing line between low and high performance (satisfaction) is crucial for the analysis of the results. There are different ways how the results can be analysed based on this dividing line:

- Average of the satisfaction scores from Nibag. When the average of the satisfaction score from Nibag is used as the dividing line, then it is possible for Nibag to compare the different departments within Nibag with each other. Nibag can see how a separate department performs in comparison with other departments and in which factors resources should be invested in order to increase customer satisfaction.
- Average of the satisfaction score from a department within Nibag. When the average of the satisfaction score from a department of Nibag is used the dividing line, then it is possible for Nibag to analyse the department itself on their customer satisfaction performance. The IPA shows in which factors resources should be invested to increase customer satisfaction.
- Predefined satisfaction score. A predefined satisfaction score can be used for setting goals. For Nibag it can be goal, for next year, to exceed the current satisfaction score. When a predefined satisfaction score is selected as dividing line, then Nibag can analyse in which factors they should invest resources in order to reach this score.

The average of the importance ranking was used as the dividing line between low and high importance. The average of the satisfaction rating of Nibag in general was used as the dividing line between low and high satisfaction. Management of Nibag wanted to compare the different departments and therefore the average of Nibag was used as dividing line between high and low satisfaction. The boundaries were used in the actual IPA method. The IPA is used in this research to provide management of Nibag information about in which factors resources should be invested and in which factors not in order to increase the quality of services and satisfaction level of their customers. The actual analysis is addressed in section 6.3.

6.2 IPA Tool

This section addresses the tool, which is developed for management of Nibag, in order to analyse the customer satisfaction results. This tool was also used for the analysis of the results which is described in detail in the next section.

The backbone of the analysis tool is the Importance-Performance analysis method. Section 4.4 described the selection of the factors which were measured in practice. The satisfaction scores on these factors, presented in the previous chapter, were obtained using an online survey application. This application can export the survey results into an Excel sheet. The tool imports these results and uses it for the analysis. The tool is developed using Microsoft Office Excel 2010 (with Visual Basic). The main idea of the analysis tool is that it should provide management of Nibag quickly a clear overview of their customer satisfaction. The tool is developed in Dutch, because management of Nibag consists of Dutch speaking persons. The screenshots and figures which are used in the remainder of this section are therefore also represented in Dutch. Figure 20 shows the complete analysis tool, which is called N-KAT (Nibag Klanttevredenheid Analyse Tool), with an English description. The data used in figure 20 is fictional. The tool consists of four different parts: IPA graph, selection criteria, advice and extra remarks. These parts will be described in detail in the next sections.

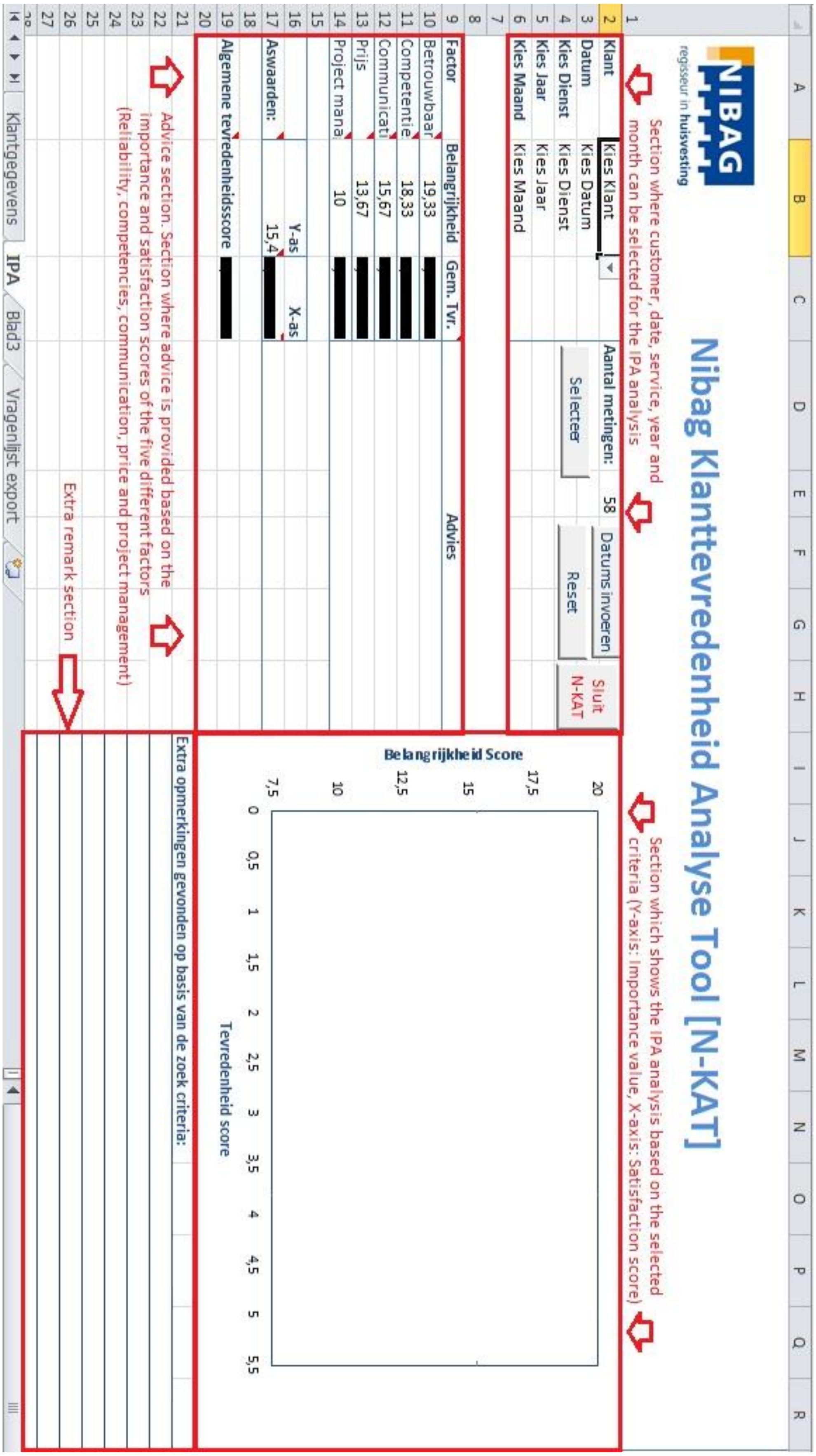

Figure 20: Analysis tool

6.2.1 Selection criteria

The first part of the IPA tool is the selection criteria part. This part is shown in figure 21.

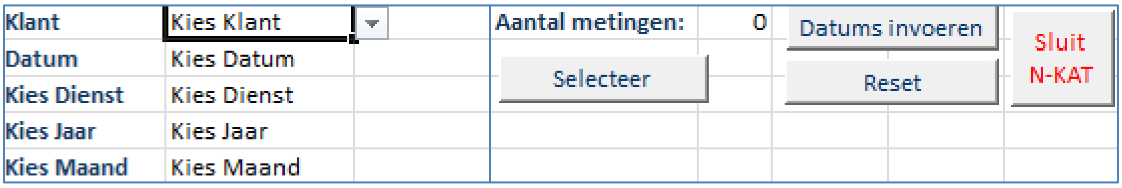

Figure 21: Selection criteria section

Based on the different selection criteria an analysis can be made. The number of measurements which comply with the selected criteria are shown behind 'Aantal metingen' (Dutch for number of measurements). The selection criteria are customer, date, service, year and month. When 'Kies Klant' (Dutch translation of 'choose customer') is selected, a dropdown menu will be displayed. In this dropdown menu a customer can be selected. This function also applies on the date, service, year and month selection criteria. The selection is actually made when the button 'Selecteer' (Dutch translation of 'select') is pushed. When a selection is made and this selection contains multiple data a 'specific date selection' message will be showed (figure 22). This message gives the user the possibility to import different dates which correspond to the different measurements. This is done because the difference between two points in time can be showed when, for example, one single customer is selected. The two different points in time can be selected in order to see the differences in IPA.

Figure 22: Message box when exactly one measurement complies with the selected criteria

When exactly one measurement is found, based on the selected criteria, a message pops up which informs the user that exactly one measurement was found based on the selected criteria (figure 23).

Figure 23: Message box when one measurement complies with the selected criteria

When a selection is made and there is no measurement, which fulfils these criteria, an error message is shown. This error message contains the selected criteria and a message that informs the user that the selection will be automatically reset.

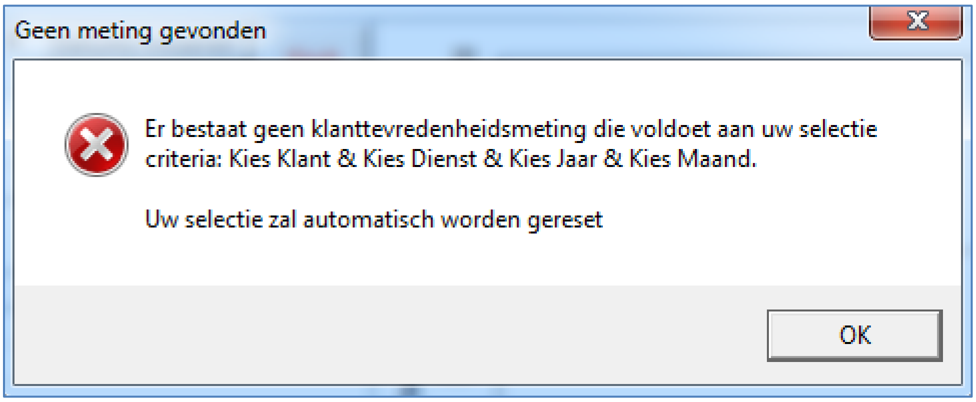

Figure 24: Message box when no measurement complies with the selected criteria

By pushing the 'Reset' button, all selections are reset to the beginning state. A message box shows the user that all criteria are reset (figure 25).

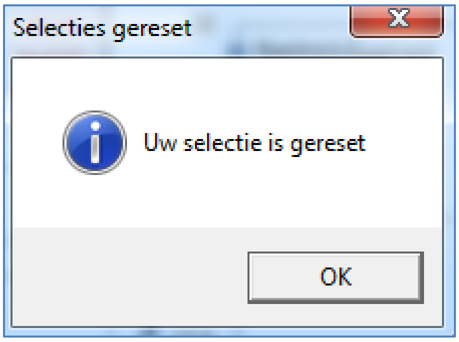

Figure 25: Reset message box

The 'Sluit N-Kat' button closes the tool. Before the tool actually closes a message box appears (figure 26). This message informs the user to not save the changes made. This was done because the results from the survey were imported and saved. When the user makes a selection and then closes the tool and saves the selection, then this selection will be displayed the next time when the tool is opened. This is why the message informs the user not to save the changes made.

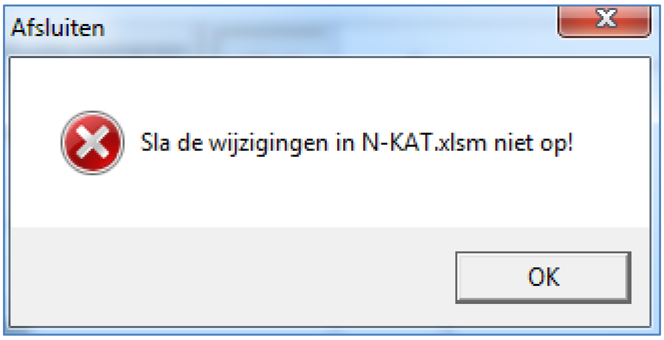

Figure 26: Closing message box

6.2.2 Advice

The second part of the IPA tool provides general information and advice about the results. The five different factors are shown with the corresponding importance score. Next to that the average satisfaction score and advice are provided (figure 27). The average customer satisfaction score is based on the results obtained from the online survey application. Based on the importance and satisfaction score an advice is provided. The average of the y-axis is calculated and used as a dividing line between low and high importance. The average of the x-axis is calculated and used as the dividing line between low and high satisfaction. The 'algemene tevredenheidsscore' (Dutch translation of overall satisfaction score) is the normalized importance score multiplied by the average satisfaction score and shows how the overall satisfaction score is based on the selection made. Figure 27 shows the begin state of the tool when no results are imported.

Factor	Belangrijkheid	Gem. Tvr.	Advies
Betrouwbaarh	19,33	#DEEL/0!	
Competenties	18,33	#DEEL/0!	
Communicatie	15,67	#DEEL/0!	
Prijs	13,67	#DEEL/0!	
Project manag	10	#DEEL/0!	
	Y-as	X-as	
Aswaarden:	15,4	#DEEL/0!	
Algemene tevredenheidsscore		#DEEL/0!	

Figure 27: Advice section in the beginning state

Based on the selections the average satisfaction score of the results are measured. Based on these scores and the importance score an advice is given. The advice consists of 'Invest in this factor', 'Keep up the good work', 'Don't do a thing, this factor has a low-priority' or 'Invest resources in other factors' (figure 28).

Gem. Tvr.	Advies
3	Investeer in deze factor
4	Ga zo door!
5	Doe niets, deze factor heeft een lage prioriteit
3	Investeer de middelen in andere factoren
3,5	Investeer de middelen in andere factoren

Figure 28: Average satisfaction and advice section

When the user selects one of the factors it shows the definition and additional information about the selected factor. In figure 29 the factor communication is selected. A remark describes the definition along with important aspects of communication.

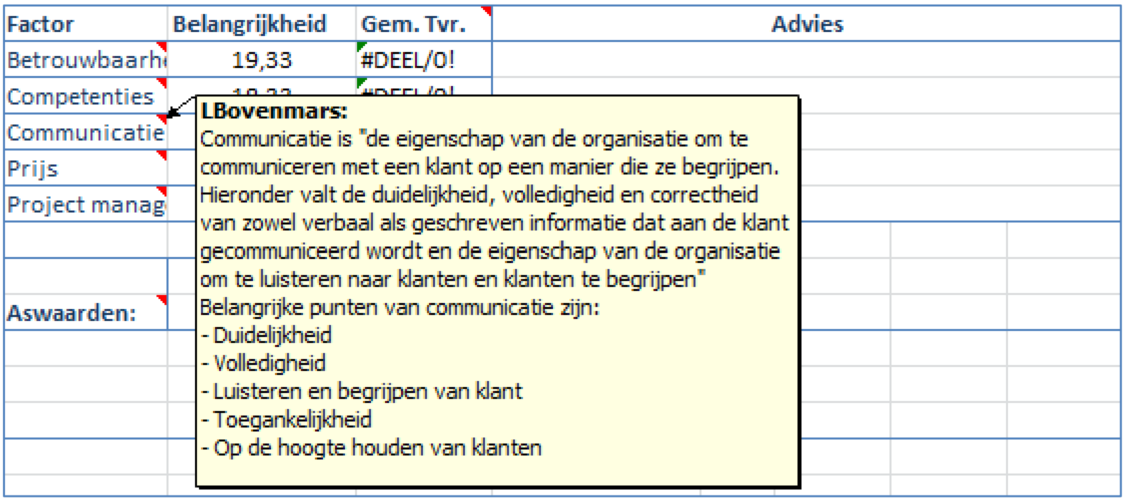

Figure 29: Additional information per factor

6.2.3 IPA graph

The third part of the analysis tool is the IPA graph. This graph shows the importance and satisfaction scores of the different factor based on the selection made. The place of the factor in the matrix corresponds with the advice provided in the previous section. When a factor, for example, is placed in quadrant I, then it scores high on satisfaction and high on importance. Nibag should keep up the good work.

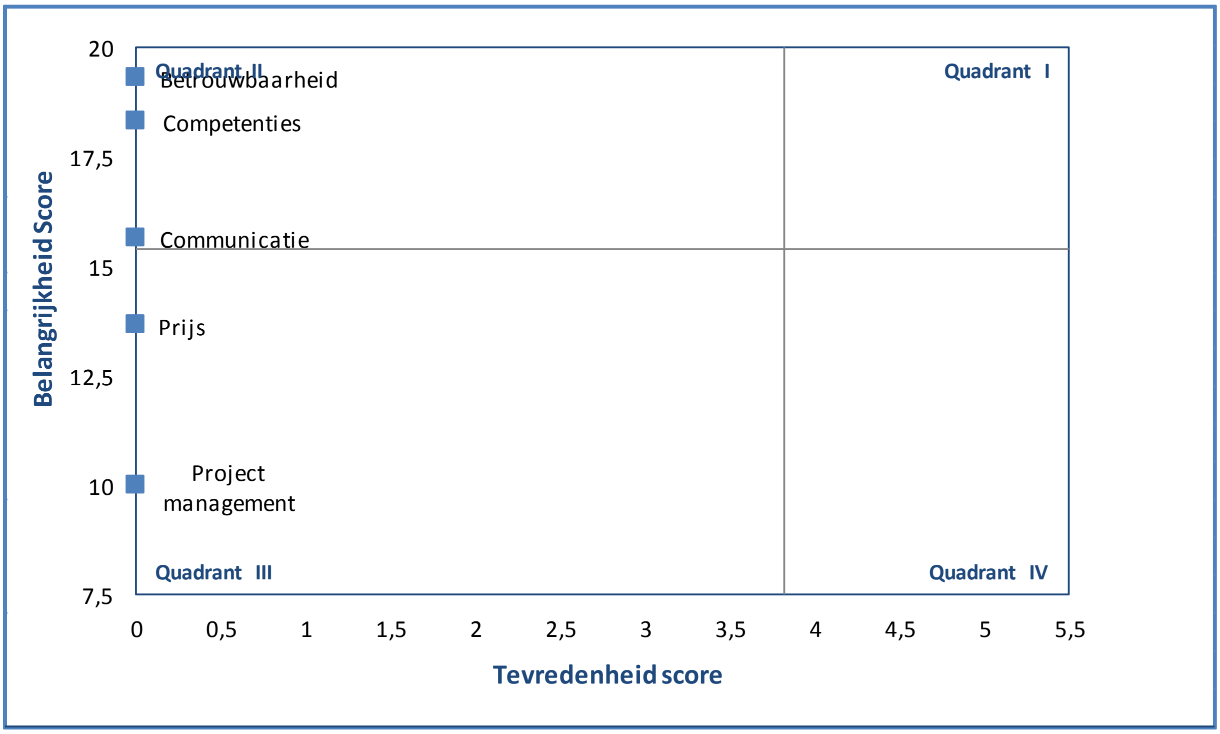

Figure 30: Example of IPA graph

6.2.4 Extra remarks

The fourth part of the analysis tool is the extra remarks section (figure 31). The online survey closed with the questions whether customers had ideas for improving the services of Nibag. When a selection is made and it contains extra remarks, then it will be showed in this section.

Extra opmerkingen gevonden op basis van de zoek criteria:

Figure 31: Extra remarks section

The analysis tool is developed using Microsoft Office Excel 2010 functions and macros. Also Visual basic programming code was used to develop the tool. The programming code can be found in appendix XV.

6.3 IPA

This section contains the actual analysis of the results obtained by applying the instrument in practice. The analysis was conducted using the IPA tool which was addressed in the previous section.

The results from the importance indication were used for the y-axis of the IPA method. The results from the satisfaction measurement instrument were used for the x-axis of the IPA. The results addressed in section 6.1 were processed, which resulted in the IPA for Nibag B.V. Figure 32 shows this importance-performance analysis. Management of Nibag indicated that the average of Nibag should be used as the dividing line between high and low satisfaction. In this way they could compare the different departments.

–Confidential–

Figure 32: Importance-performance analysis of Nibag

The IPA shows that three factors (reliability, competencies and communication) are placed in quadrant I. This means that customers find these factors important and Nibag, as a company, score high on these factors. Nibag should keep up the good work concerning these factors. The two other factors are placed in quadrant III. Nibag scores lower than the average on these factors concerning satisfaction. The customers indicated that these factors were relatively less important, so therefore Nibag does not have to do a thing. These factors have a low priority.

Average satisfaction score

The average satisfaction score informs us how satisfied the customers of Nibag are. This score is calculated by multiplying the importance scores with the average satisfaction score per factor and add these results together. So the score is based on the importance score and the average satisfaction score per factor. The most importance factor (reliability) has the most weight in the overall satisfaction score; the least important factor (project management) has the least weight in the overall satisfaction score. Table 21 address the calculation of the overall satisfaction score. Before the calculation could be conducted, first the importance score needed to be normalized. This was done because the importance factor now adds up to 77% (column 2) and this needed to be 100% in order to be able to make a correct calculation. The normalized percentages (column 3) is multiplied with the average satisfaction score (column 4) and results in the average satisfaction score per factor (column 5)

Table 21: Overview of the overall satisfaction score calculation

–Confidential–

The maximum average satisfaction score is five. As can be seen in table 21 the average satisfaction score for Nibag is *–Confidential–*. This means that, including the weight of the different factors, customers who filled out the survey are generally satisfied with services provided by Nibag.

The goal of Nibag was to continuously improve customer satisfaction. The following sections address the IPA's from the six different services (sound, monuments care and redevelopment, MJOP, BPM, safety, and energy) provided by Nibag. These IPA's provide management of Nibag information about how to efficiently invest resources in order to increase customer satisfaction. The following sections only provide the IPA's and the corresponding conclusions. The actual data used for the analysis can be found in appendix XVI.

6.3.1 Sound IPA

This section addresses the importance-performance analysis of the sound service provided by Nibag. The analysis is based on 16 measurements and can be found in figure 33.

–Confidential–

Figure 33: IPA of the sound service provided by Nibag

Based on the IPA it can be concluded that the sound service from Nibag have three factors in quadrant I. These factors are reliability, competencies and communication. The sound service should keep up the good work. Two factors are placed in quadrant III (price and project management). These factors have a low priority, so Nibag does not have to do a thing.

Based on the results in appendix XVI the average satisfaction score for the sound service can be calculated. The total satisfaction score for the sound service is *–Confidential–*. This means that, including the weight of the different factors, customers are *–Confidential–* with the sound services provided by Nibag.

During the data collection some customers have provided extra remarks concerning the sound service provided by Nibag. These remarks were:

- *"Make sure that the two different locations work in a uniform way"*
- *–Confidential–*
- *–Confidential–*
- *–Confidential–*
- *–Confidential–*

One remark is not confidential to show how a customer remark looks like. The other remarks however are marked as confidential.

6.3.2 Monuments care and redevelopment IPA

This section addresses the importance-performance analysis of the monuments care and redevelopment service provided by Nibag. The analysis is based on 5 measurements and can be found in figure 34.

–Confidential–

Figure 34: IPA of the monuments care and redevelopment service provided by Nibag

–Confidential–

Based on the results in appendix XVI the average satisfaction score for the monuments care and redevelopment service can be calculated. The total satisfaction score for the monuments care and redevelopment service is *–Confidential–*. This means that, including the weight of the different factors, customers are *–Confidential–* with the monuments care & redevelopment services provided by Nibag.

6.3.3 MJOP IPA

This section addresses the importance-performance analysis of the MJOP service provided by Nibag. The analysis is based on 15 measurements and can be found in figure 35.

–Confidential–

Figure 35: IPA of the MJOP service provided by Nibag

–Confidential–

Based on the results in appendix XVI the average satisfaction score for the MJOP service can be calculated. The total satisfaction score for the MJOP service is *–Confidential–*. This means that, including the weight of the different factors, customers are *–Confidential–* with the MJOP services provided by Nibag.

During the data collection some customers provided extra remarks concerning the MJOP service provided by Nibag. These remarks were:

- *–Confidential–*
- *–Confidential–*

6.3.4 BPM IPA

This section addresses the importance-performance analysis of the BPM service provided by Nibag. The analysis is based on 5 measurements and can be found in figure 36.

–Confidential–

Figure 36: IPA of the BPM service provided by Nibag

–Confidential–

Based on the results in appendix XVI the average satisfaction score for the BPM service can be calculated. The total satisfaction score for the BPM service is *–Confidential–*. This means that, including the weight of the different factors, customers are *–Confidential–* with the BPM services provided by Nibag.

During the data collection some customers provided extra remarks concerning the BPM service provided by Nibag. These remarks were:

- *–Confidential–*

6.3.5 Safety IPA

This section addresses the importance-performance analysis of the safety service provided by Nibag. The analysis is based on 2 measurements and can be found in figure 37.

–Confidential–

Figure 37: IPA of the safety service provided by Nibag

–Confidential–

Based on the results in appendix XVI the average satisfaction score for the safety service can be calculated. The total satisfaction score for the safety service is *–Confidential–*. This means that, including the weight of the different factors, customers are *–Confidential–* with the safety services provided by Nibag.

During the data collection some customers provided extra remarks concerning the safety service provided by Nibag. These remarks were:

- *–Confidential–*

6.3.6 Energy IPA

This section addresses the importance-performance analysis of the energy service provided by Nibag. The analysis is based on 15 measurements and can be found in figure 38.

–Confidential–

Figure 38: IPA of the energy service provided by Nibag

–Confidential–

Based on the results in appendix XVI the average satisfaction score for the energy service can be calculated. The total satisfaction score for the energy service is *–Confidential–*. This means that, including the weight of the different factors, customers are *–Confidential–* with the energy services provided by Nibag.

During the data collection some customers have provided extra remarks concerning the energy service provided by Nibag. These remarks were:

- *–Confidential–*
- *–Confidential–*
- *–Confidential–*

6.4 Concluding remarks

This chapter provided the results of the customer satisfaction measurement instrument applied in practice. A tool was developed which supported in the importance-performance analysis of the results. This analysis addressed the importance and satisfaction (performance) scores of the different factors. The dividing lines divided the method into four quadrants. Each factor was placed in one of the quadrants based on the importance and satisfaction scores. The IPA clearly showed in which factors Nibag should invest resources and in which resources not in order to increase customer satisfaction. This research addressed the IPA's of Nibag as a whole and its six services offered to their customers. Table 22 contains an overview of Nibag and their services, factors and advice. Based on the four quadrants in the IPA analysis advice is given on the customer satisfaction factors per service. The advice is: 'Invest in this factor', 'Keep up the good work', 'Don't do a thing; this factor has a low-priority' or 'Invest resources in other factors'.

Table 22: Overview of IPA advice given to Nibag and its provided services

–Confidential–

The total satisfaction score is calculated to provide Nibag one score on customer satisfaction. The total satisfaction score is based on the importance and satisfaction score per factor. Adding up these scores resulted in the total satisfaction score. Table 23 provides an overview of the overall satisfaction score of Nibag and their provided services.

Table 23: Overall satisfaction score overview

–Confidential–

Based on the research conducted and this analysis the research will be discussed in the next chapter.

7 Discussion

This chapter address the conclusions which are drawn upon the research described in the previous chapters. First answers are given on the research questions in section 7.1. The recommendations, which are based on the conclusions, are provided in section 7.2. The contributions of this research for both theory and practice are given in section 7.3. Section 7.4 addresses the limitations of this research together with ideas for future research.

7.1 Conclusions

This research started with the identification of the problem which existed within Nibag B.V. Nibag wanted to provide services of good quality and wanted to preserve their ISO 9001:2008 certification. In order to do so, the satisfaction of customers needed to be measured. Sub-research questions were proposed to align this research. This section provides the conclusions and the answer on the research question of this study by answering the sub-research questions.

Nibag wanted to maintain their ISO 9001:2008 standard. In order to do so Nibag had to continuously improve their quality. Next to this Nibag also wanted to provide services of high quality. This resulted in the following research question: *"How can Nibag measure the satisfaction of their customers in order to continuously improve the quality of their provided services and their quality management system?"* Answering the sub-research questions was used as basis for answering this research question.

Before the actual problem could be addressed, the current situation had to be identified. The sub-research question which addressed this problem was:

SQ1: How does Nibag currently deal with customer satisfaction?

a. What are the current definition, measurement and process towards customer satisfaction?

b. What problems are encountered?

Chapter one addressed the current situation of customer satisfaction measurement within Nibag. Customer satisfaction definitions from Nibag and theory differ from each other. Nibag state that customers are satisfied when they fulfil the agreed requirements, expectations, delivery times and legal obligations. Theory states that customers are satisfied when their stated or implied needs or expectations have been fulfilled. The definition from theory is more detailed and focuses also on the implied needs where the definition from Nibag is more concise and only focuses on the agreed requirements, expectations, delivery time and legal obligations. This difference between the definitions however was not recognized during the design of the instrument. The factors identified by literature were not found irrelevant by all the customers or employees of Nibag. This indicates that the difference, on implied needs, in the two definitions has no influence on the identification and relevance of customer satisfaction factors.

The measurement of customer satisfaction was not or only briefly done within Nibag. Project leaders had to, during the annual evaluative conversations, let the customers fill out a little survey. It became clear that these surveys were hardly ever conducted and the results were just stored on the intranet. The results were not analysed and did not lead to actions to improve the customer satisfaction. These were the main problems encountered within customer satisfaction measurement within Nibag.

During the problem investigation it became clear that the measurement of customer satisfaction needed to be improved. The following sub-research question described the concept 'customer satisfaction':

SQ2: What does literature state about customer satisfaction?

Chapter two addressed the concept of customer satisfaction. There are multiple definitions of customer satisfaction in literature. Several researchers and the ISO address the gap between the expectations and the perceived value of a product or service. When the perceived value exceeds the expectations then customers will be satisfied. The definition used in this research was: *the customer's perception of the degree to which the customer's stated or implied needs or expectations have been fulfilled.* Customer satisfaction is important for organizations because it has effect on organizations' market share and customer retention and therefore is considered as a key success factor for organizations. One customer, of the energy service, indicated that there was a problem with the cost of data errors. He indicated that this had to be resolved, because they have the intention to keep cooperating with Nibag in the future. This remark from the customer agrees with theory. When Nibag resolves the problem with costs of data error then the customer will be satisfied. The customer wants to keep doing business with Nibag in the future, only when this issue is resolved. Solving the problem satisfies the customer which leads to customer retention.

Measurement of customer satisfaction is a requirement of the ISO 9001 standard. Nibag is ISO 9001:2008 certified and therefore has to measure customer satisfaction. The following sub-research question described the ISO 9001:2008 standard:

SQ3: What does literature state about ISO 9001:2008 standard?

Chapter two also addresses the concept of ISO 9001:2008. The ISO 9001:2008 standard provides a set of standardized requirements for a quality management system. This quality management system should be implemented in order to satisfy customers. The ISO 9001:2008 standard provides a tried and tested framework for taking a systematic approach to managing the organization's processes so that they consistently turn out product that satisfies customers' expectations. The measurement, analysis and improvement process of the quality management system is the topic where this research focused on.

It was clear that customer satisfaction needed to be measured according to ISO 9001:2008. It still remained unclear which aspects of customer satisfaction should be measured. The following sub-research question addressed this problem:

SQ4: What aspects of customer satisfaction should be measured?

a. Which aspects can be identified by literature?
b. Which aspects, from Nibag's experience with customers, are important concerning customer satisfaction?
c. Which aspects do customers of Nibag find important concerning customer satisfaction?

Chapter three addressed the literature review which was conducted in order to investigate which factors of customer satisfaction were measured in literature. A total of 27 articles identified 27 factors of customer satisfaction which were mentioned in literature. Based on the definitions from literature these factors were grouped together which resulted in a list of ten different customer satisfaction factors. Chapter four addressed the workshops and interviews conducted with Nibag and their customers. The workshops and interviews investigated the factors which should be measured by practice. The factor 'provide added value' was identified by Nibag and their customers as additional factor in comparisons with factors identified by literature. Each factor from literature was indicated as relevant by both Nibag and their customers, so therefore each factor could be used in measurement of customer satisfaction.

The factors which should be measured were clear after answering this sub-research question. How they could be measured was not investigated. The following sub-research question addressed this problem:

SQ5: **How can customer satisfaction be measured?**

Chapter five addressed the selection and design of the customer satisfaction measurement instrument. For this research a web-based survey application was used to measure customer satisfaction. The factors which were used for measuring customer satisfaction were: reliability, competencies, communication, price and project management. These factors were chosen based on the validation of the instrument using expert groups. In the validation step these factors were chosen because customers and Nibag indicated that these factors were the most important ones (the opinion of customers was indicated as more important so therefore the ratio 2:1 was chosen). The factors were operationalized using existing questionnaires and definitions from literature.

After the design of the measurement instrument it was used in practice. The results were obtained and analysed. The satisfaction level of customers concerning Nibag was addressed by the following sub-research question:

SQ6: **What is the current satisfaction level of Nibag's customers?**

Chapter six addressed the results from applying the survey in practice. These results were analysed using the Importance-Performance analysis. This analysis addressed the importance and satisfaction (performance) scores of the different factors and clearly showed in which factors Nibag should invest resources and in which factors not. The overall satisfaction of customers concerning Nibag was also measured. The satisfaction of customers concerning Nibag and the services provided by Nibag were measured. In order for Nibag to reach their goal (continuously improve customer satisfaction) they should

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After the research was conducted, conclusions could be drawn. Based on the conclusions also recommendations could be provided. These conclusions and recommendations could help Nibag improving their business. The next sub-research question was therefore proposed:

SQ7: How does this research help Nibag improving their business?

a. What conclusions can be drawn?
b. What can be recommended from this research?

In this research a customer satisfaction measurement instrument was designed based on relevant literature and input from practice. The developed customer satisfaction measurement instrument was tailored on organizations which provide professional services on housing management. The analysis tool clearly and understandably showed management of Nibag in which factors Nibag should invest resources and in which factors not. Investing resources in the right factors increases the quality of service provided and thus will increase customer satisfaction.

The research question for this research was: *"How can Nibag measure the satisfaction of their customers in order to continuously improve the quality of their provided services and their quality management system?"*

Nibag can measure their customer satisfaction by applying the developed instrument in practice. Analysing the results with the developed analysis tool provides management of Nibag a quick and clear overview of the current customer satisfaction state and provides advice on factors were resources should be invested in. Next to that the tool can be used to conduct an in-depth analysis of the instrument results. In this way 'negative' scores can be identified. Management of Nibag should focus on the aspects which score 'negatively' and the extra remarks which were provided by customers of Nibag. In this way the quality of services offered and the quality management system can be improved. The progress on customer satisfaction can be traced by using the instrument at different moments in time.

7.2 Recommendations

This chapter already addressed the conclusions which could be drawn upon the research conducted. Some recommendations remain which could help Nibag improve their business. First of all it must be concluded that customers are generally satisfied with the services provided by Nibag. However some improvements should be made.

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The instrument developed in this research enables Nibag to measure customer satisfaction at different moments in time. The instrument remains the same, which enables Nibag to compare the data of different customer satisfaction measurements. Based on these comparisons Nibag can keep track of their customer satisfaction level. But this is only possible when Nibag actually measures their customer satisfaction at different moments in time. So it is recommended that Nibag frequently measures their customer satisfaction.

7.3 Contributions

This section addresses the contributions of this research for theory (section 7.4.1) and practice (7.4.2).

7.3.1 Contributions for theory

This research designed an instrument which is tailored specifically to small and medium sized enterprises which provide professional services on housing management. By designing this instrument contributions were made for theory.

First, customer satisfaction factors for SME's which provide professional services on housing management were identified. A measurement instrument for customer satisfaction in Nibag's context did not exist. It was not clear which customer satisfaction factors should be measured. The systematic literature review, conducted in this research, identified these factors. None of the selected papers addressed research on customer satisfaction factors for organizations which provided professional services on housing management. Therefore none of the papers addressed the same factors which were used in this research. The systematic literature review revealed that the customer satisfaction factors in organizations which provide professional services are not the same and depend on the context in which these organizations operate. For example factors used in the banking sector differ from factors which are used for customer satisfaction measurement within the housing management sector, although both organizations provide professional services. This research contributes to theory because it identified relevant factors for customer satisfaction measurement in organizations which provide professional services on housing management.

Second, the identified factors from literature reviewed on their applicability in practice. Factors identified by literature are not always applicable in a practical context. In workshops and interviews, with people from practice (employees and customers of Nibag), the factors were reviewed on relevance and ranked on importance. This showed the applicability of the identified factors in a practical context. Remarkable to see was that this research showed that the SERVQUAL dimensions tangibles and empathy were not found most important by customers of Nibag and therefore not included in the instrument design. Especially tangibles was found not most important (it did not receive any points during the ranking of the five most important factors). This means that customers of organizations which provide professional services on housing management are less interested in the appearance of physical facilities, equipment, personnel and communication materials and more interested in the quality, price and the process of service delivery itself (project management).

Finally, a customer satisfaction measurement instrument was designed. The relevant and important factors were operationalized with questions. The instrument was applied in a practical context and the results were analysed. In theory there does not exist a customer satisfaction measurement instrument which is tailored to the companies such as Nibag. This research contributes to theory by describing in detail how the instrument was designed. Next to that the instrument was validated and applied in practice which ensures applicability.

7.3.2 Contribution for practice

Beside the contributions to theory, this study makes some important contributions to practitioners at Nibag and for practice in general.

First, although the design of the measurement instrument was based on insights from practitioners and customers of Nibag only, the instrument is clearly explained and can be used by other companies, which operate in the same context, as well.

Second, the approach to design the measurement instrument was clearly described. Companies in all sorts of branches can follow this approach and create their own customer satisfaction measurement instrument.

Finally, the developed analysis tool was clearly described. The tool was based on the instrument which was designed for Nibag, but the tool can be adjusted. In this way the tool can provide analyses, based on the instrument design, for other companies as well.

7.4 Limitations and future research

After the research was finished and conclusions were drawn, some limitations of this research could be identified. These limitations were number of customers used in interviews, number of respondents, and the analysis tool.

In order to identify which factors were important for customers concerning their satisfaction, interviews were conducted. Five customers of four different services offered by Nibag were interviewed. One can say that identifying customer satisfaction factors based on only five customers is poor. After the fourth interview there were no new factors identified. It was therefore chosen to conduct an additional interview to be sure that no critical information was missing. After the fifth interview no new information was gathered. This indicated that all relevant information was retrieved. Next to that the interviews showed similarities with literature. Almost all factors identified by the customers were also mentioned by literature. Not one factor identified by literature was indicated as irrelevant by all customers. This also indicates that all relevant information was retrieved. The five different customers represented four of the seven services offered by Nibag. By selecting these different customers it was tried to create a general image of Nibag's customer. A more complete image of Nibag's customer could be made when also customers, which obtained the other three services, were also interviewed and included in this research.

The data collection in this research had a response rate of 53%. This can be seen as a limitation, because 47% of the customers did not filled out the survey. A more detailed analysis could be made when more customers had participated in the customer satisfaction research. However a response rate of 53% is acceptable. As mentioned in section 5.1.2 Moody and Mueller (2009) stated that a response rate less than 50% is poor and a response rate of more than 70% is good. So this research has an acceptable response rate of 53%. The response rate could be increased when customers are allowed to not fill out their organization name. One customer filled out "-" as organizations name which made him/her anonymous. Another customer stated that she did not want to fill out this survey because it was not anonymous. In order to ensure anonymity the question which ask for the organization name should be discarded. This will increase the response rate and the results will be less biased, because respondents are more willing to give honest answers. Drawback for discarding this question is that Nibag cannot analyse how they can increase customer satisfaction per customer.

The tool, which was developed by the researcher, provides importance-performance analysis on the selected criteria. The researcher has sufficient programming skills to make a working tool, but there are still some improvements which can be made. These improvements can be made on graphical and functional aspect. The tool is developed with Microsoft Office Excel, which is a digital calculation application, and therefore does not contain fancy lay-out features. The tool could also be made faster and securer. The user of the analysis tool can alter each cell and therefore is able to change the functionalities of the tool. By making these cells un-editable the tool is more secure. Based on the search criteria customer data is selected. This takes some time. Making the search and selection functions more efficient will result in a faster tool. The tool could also be graphically improved. Microsoft Office Excel does not focus on 'fancy' features which are appealing for the eye. The buttons, for example, are standard and Excel does not provide more appealing buttons. The tool however does what is was designed for: analysing customer satisfaction data which was imported from a web-based survey application. Next to that Nibag indicated that they were more interested in a working tool than an appealing tool which does not work.

Based on these limitations and conclusions in the sections above, some ideas for future research can be identified:

- The identified factors could be researched to investigate if there is a relationship between them and how they relate to each other.
- Improving the instrument by validating the instrument on the criterion and constructs. In this way criterion and construct validation can be ensured.
- Using more customers of organizations which provide professional service on housing management might reveal other/new valuable insights for the development of the measurement instrument.
- Applying the approach, used in this research, in organizations which have other characteristics than Nibag might reveal valuable new insights.

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Appendix I - Current customer satisfaction investigation

This appendix contains the procedure of how to investigate customer satisfaction within Nibag. This procedure is translated by the researcher. The original (Dutch) version can be found in 'Quality management manual', which can be obtained by the quality coordinator of Nibag.

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Appendix II - Customer satisfaction survey (amount < €1000)

This appendix contains the customer satisfaction survey for customers of Nibag in projects where less than € 1000 is spent. This survey is translated by the researcher. The original (Dutch) version can be found in 'form customer satisfaction survey', which is stored at the intranet of Nibag.

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Appendix III - Customer satisfaction survey (€1000 < amount > €20000)

This appendix contains the customer satisfaction survey for customers of Nibag in projects where between € 1000 and €20.000 is spent. This survey is translated by the researcher. The original (Dutch) version can be found in ‘form customer satisfaction survey’, which is stored at the intranet of Nibag.

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Appendix IV - Customer satisfaction survey (amount > €20000)

This appendix contains the customer satisfaction survey for customers of Nibag in projects where more than €20.000 is spent. This survey is translated by the researcher. The original (Dutch) version can be found in ‘form customer satisfaction survey’, which is stored at the intranet of Nibag.

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Appendix V - Methodological literature review

This appendix contains a detailed description of the methodological literature review which already was addressed in chapter 3.

The table below gives an overview of the search engines, keywords, queries and results used in the literature review.

Search engine	Keywords	Query	Results	Results (after reading title and abstract)	Results (after literature scan)
Scopus	Customer satisfaction AND factors	Query 1	41	32	
Scopus	Customer satisfaction AND determinants	Query 2	20	16	
Scopus	Customer satisfaction AND antecedents	Query 3	16	5	
Scopus	Customer satisfaction AND elements	Query 4	4	1	
Scopus	Customer satisfaction AND drivers	Query 5	18	10	
Scopus	Customer satisfaction AND variables	Query 6	7	1	
Scopus	Customer satisfaction AND criteria	Query 7	5	1	
Scopus	Customer satisfaction AND attribute	Query 8	35	15	
Scopus	Customer satisfaction AND construct	Query 9	3	0	
Scopus	Customer satisfaction AND measur*	Query 10	130	45	
Scopus	Customer satisfaction AND professional services	Query 11	5	4	
Total scopus	-	11	284	130 (- 6 duplicates) = 124	60

Web of Knowledge	**Keywords**	**Query**	**Results**	**Results (after reading title and abstract)**	**Results (after literature scan)**
Web of Knowledge	Customer satisfaction AND factors	Query 1	30	10	
Web of Knowledge	Customer satisfaction AND determinants	Query 2	20	9	
Web of Knowledge	Customer satisfaction AND antecedents	Query 3	12	6	
Web of Knowledge	Customer satisfaction AND elements	Query 4	7	2	
Web of Knowledge	Customer satisfaction AND drivers	Query 5	13	7	
Web of Knowledge	Customer satisfaction AND variables	Query 6	5	0	
Web of Knowledge	Customer satisfaction AND criteria	Query 7	2	1	
Web of Knowledge	Customer satisfaction AND attribute	Query 8	22	9	
Web of Knowledge	Customer satisfaction AND construct	Query 9	3	0	
Web of Knowledge	Customer satisfaction AND measur*	Query 10	132	40	
Web of Knowledge	Customer satisfaction AND professional services	Query 11	6	1	
Total Web of Knowledge	-	11	252	85 (- 4 duplicates) = 81	19
Search engines	**Keywords**	**Total number of Queries**	**Total Results**	**Total Results (after reading title and abstract)**	**Total Results (after literature scan)**
Total scopus and	-	22 (11 queries	536	205 (- duplicates) =	79

web of Knowledge	per search engine)

The queries which are used for this research are described below. The same keywords which are used in the literature search are entered in both search engines Scopus and Web of Knowledge. Some queries needed additional selection criteria or information. These are also mentioned with the corresponding query.

Query 1: Scopus: TITLE(customer satisfaction AND factors)
Web of Knowledge: Title=(customer satisfaction) AND Title=(factors)

Query 2: Scopus: TITLE(customer satisfaction AND determinants)
Web of Knowledge: Title=(customer satisfaction) AND Title=(determinants)

Query 3: Scopus: TITLE(customer satisfaction AND antecedents)
Web of Knowledge: Title=(customer satisfaction) AND Title=(antecedents)

Query 4: Scopus: TITLE(customer satisfaction AND elements)
Web of Knowledge: Title=(customer satisfaction) AND Title=(elements)

Query 5: Scopus: TITLE(customer satisfaction AND drivers)
Web of Knowledge: Title=(customer satisfaction) AND Title=(drivers)

Query 6: Scopus: TITLE(customer satisfaction AND variables)
Web of Knowledge: Title=(customer satisfaction) AND Title=(variables)

Query 7: Scopus: TITLE(customer satisfaction AND criteria)
Web of Knowledge: Title=(customer satisfaction) AND Title=(criteria)

Query 8: Scopus: TITLE(customer satisfaction AND attribute)
Web of Knowledge: Title=(customer satisfaction) AND Title=(attribute)

Query 9: Scopus: TITLE(customer satisfaction AND construct)
Web of Knowledge: Title=(customer satisfaction) AND Title=(construct)

Query 10: Scopus: TITLE(customer satisfaction AND measur*)
Web of Knowledge: Title=(customer satisfaction) AND Title=(measure*)

Selection criteria:

I chose to use the word ‘measur’ with a ‘*’, because in this way makes sure that the search engine searches papers with ‘measur’ in their titles. Measur* means that each paper with word starting with ‘measur’ is found (such as measuring, measures or measurement).

Query 11: Scopus: TITLE(customer satisfaction AND professional services)
Web of Knowledge: Title=(customer satisfaction) AND Title=(professional services)

Selection criteria

Nibag delivers professional services to other businesses. Therefore the query containing 'customer satisfaction' and 'professional services' is also included in this literature review.

During the literature review it became clear that also other keywords could be used in order to find more interesting literature about customer satisfaction. These keywords are: antecedents (query 3), drivers (query 5), elements (query 4), variables (query 6), criteria (query 7), attribute (query 8) and construct (query 9). All these keywords are used within this literature review.

Results

Entering the eleven search queries in Scopus resulted in 284 found articles. The total number of articles found in Web of Knowledge was 252. Reading the titles and abstract of these papers indicated if the paper could be interesting for this research. From the 284 articles found in Scopus 154 articles were discarded so 130 articles were left. From these 130 articles 6 were duplicates, so 124 articles remained. From the 252 articles found in Web of Knowledge 167 articles were discarded, so 85 articles were left. From these 85 articles 4 were duplicates, so 81 articles remained.

The main reasons why these articles were discarded are because they focus on internet satisfaction or contain factors from unsuitable research settings. All the results containing factors, determinants, elements etc. of internet customer satisfaction are discarded from the list. These results mainly focus on the online aspects of customer satisfaction (how satisfied the customers are with for example the provided e-commerce system). Factors etc. such as user interface and online support are not aspects which will be included in this research. Examples of factors unsuitable research settings are: freshness of salads in a salad bars etc.

The literature review was left with 124 articles from Scopus and 81 articles from Web of Knowledge. The initial idea of this review was to scan all the 205 (124 + 81= 205) remaining papers in the literature scan. But due to the time constraints the articles were first compared on their uniqueness, before all these papers are scanned. Both search engines address the same journals, so the chance of retrieving the same papers is very likely. After the comparison 124 + 37 = 161 articles remained. This means that 44 articles were present in the results of both Scopus and Web of Knowledge. The forward and backward literature search provided 4 articles. So the total number of articles for the literature scan is 165.

After the literature scan 88 articles remained which had interesting factors for this research. Reading all the 88 articles would request too much time therefore additional selection criteria were introduced. The first criterion is the publication date of articles. Articles which are published in the last five years (so published after 2007) are included in this literature review. Due to these two criteria it is tried to ensure that no important articles are missing. The second criterion is selecting papers based on their citations. Important articles are likely to be cited more than other less important articles. Articles which are cited more than 20 times are included in this literature review. It is likely that recent published articles are less cited than articles which exist more than twenty years. After applying these two criteria 25 articles remained. To ensure that important or interesting articles were not discarded, the articles which did not met the criteria were investigated on interestingness and importance. Two articles were eventually added to the list of important articles, which resulted in a final list of 27 scientific articles which are used in this research. A more detailed overview of the selection of the 27 articles can be found in the remainder of this appendix.

The most recent articles (from the last 5 years) were selected from Scopus and Web of Knowledge. This resulted in 40 articles in total.

Year	Number of articles Scopus	Number of articles Web of Knowledge	Total
2012	1	0	1
2011	11	0	12
2010	8	5	25
2009	8	1	34
2008	4	2	40

From these 40 articles the most interesting articles will be selected to be read and included in the research. The selection is based on the factors identified in the literature scan. The goal is to find distinctive factors of customer satisfaction therefore most of the articles are discarded because they address the same factors as already addressed by other articles. The most interesting and suitable articles, based on the recentness criteria, can be found in the table below.

Article	Factors	Remarks
Scopus		
Vazifehdoust, H., M. Ram, et al. (2012).	Security, Honesty, Communication, Competency, Reliability, Politeness\ Contribution, Responsiveness, Friendly behaviour, Commitment, Attention, Accessibility, Flexibility,	
Noyan, F. and G. G. Simsek (2011).	Price-quality, friendly personnel, service,	
Cui, Q. A., X. Wang, et al. (2011).	Attitude of staff, waiting time, staff's knowledge and skills, pricing,	
Li, D. and R. Yu (2011).	Service quality (process speed, staff skills), pricing, brand image (well-known brand)	
Bairi, J. and B. M. Manohar (2011).	Reliability, responsibility, information provision, customer friendliness, knowledge/skills	
Borjalilu, N., M. Zowghi, et al. (2011).	Cost of product, communication,	
Zhou, L. and Q. Z. Wu (2011).	Pricing, range of goods, safe and reliable product quality,	

	friendly service attitude, professional knowledge, complaint handling,
Mukhopadhyay, I., S. K. Bandyopadhyay, et al. (2011).	SERVQUAL
Anisor, N., D. Adela-Eliza, et al. (2010).	Products price, products quality, products variety and employers attitude
Park, Y. and S. C. Gates (2009).	Politeness, problem resolution, knowledge, speed,
Arbore, A. and B. Busacca (2009).	Functional quality: reliability, speed, accuracy, security. Relational quality: responsiveness, assurance, friendliness, courtesy, commitment, communication. Economics: price-quality ratio, price fairness.
Matzler, K., J. Füller, et al. (Normcommissie_400_176_"Kwaliteitsmanagement").	Quality, safety, appearance of employees, friendliness of employees, competence of employees, helpfulness
Anderson, S., L. K. Pearo, et al. (Normcommissie_400_176_"Kwaliteitsmanagement").	Interaction: helpfulness/courtesy of personnel, waiting time, efficiency, timely/accurate information, responsiveness, services
Füller, J. and K. Matzler (Normcommissie_400_176_"Kwaliteitsmanagement").	Information and employees: information, friendly employees. Price quality ratio: reasonable pricing.
Web of Knowledge	
Tang, W. W. and T. T. Zheng (2010).	Service: complaints handling, friendly trustworthy attitude, employees have good professional skills, response time. Price: price is reasonable Image: enterprise has good reputation

Articles from 2007 which are more than 20 times cited are also included in this research. Only those articles from which interesting factors are identified in the literature scan are included in the table below.

Article	Cited	Remarks
Scopus		

Millán, Á. and A. Esteban (2004).	20	
Matzler, K., E. Sauerwein, et al. (2003).	62	
Hasin, M. A. A., R. Seeluangsawat, et al. (2001).	28	
Mihelis, G., E. Grigoroudis, et al. (2001).	46	
Siskos, Y., E. Grigoroudis, et al. (1998).	24	
Web of knowledge		
Kekre, S., M. S. Krishnan, et al. (1995).	41	

Articles which are not recent (so published after 2008) and not cited more than 20 times could contain factors which might be interesting for this research. Therefore articles which are interesting based on their identified factors are also included in the research. The table below contains the articles which identified interesting factors for this research.

Source	Cited	Factors
Scopus		
Al-Mutawa, T., T. Eldabi, et al. (2006).	0	Product: satisfaction. Price: satisfaction. Service: Reliability: employees deliver service at the right time, is dependable, show sincere interest in solving the problem, when promises are made, they do so, keeps its records accurately. Responsiveness: employees tell exactly when services will be performed, able to provide prompt service, always willing to help, never too busy to respond to the request. Assurance: employees have knowledge to answer any questions about services, makes you trust the organization, are polite and treats you with respect, make you feel safe and comfortable when you talk with them. Empathy: employees gives individual attentions, gives personal attention, have your

			best interests at heart, understand your specific needs, operates at convenient hours. Tangibles: up-to-date equipment, physical facilities are visually appealing, employees are well dressed and appear neat, physical facilities appear in keeping with the type of services provided
Burns, R. C., A. R. Graefe, et al. (2003).	18		Services: Availability of staff to answer questions, visibility of staff, safety and security, courteous and friendly staff, opportunity to offer suggestions to staff, adequate assistance. Information: general information, safety, ease of obtaining information, current and accurate information,

The total list of articles which will be read and included in this research is addressed in the table below. The articles are selected based on their recentness (published in the last 5 years, so between 2012 and 2008), cited more than 20 times and interestingness because of factors identified.

Number	Article	Factors	Selection based on
1	Vazifehdoust, H., M. Ram, et al. (2012).	Security, Honesty, Communication, Competency, Reliability, Politeness\ Contribution, Responsiveness, Friendly behaviour, Commitment, Attention, Accessibility, Flexibility,	Recentness
2	Noyan, F. and G. G. Simsek (2011).	Price-quality, friendly personnel, service,	Recentness
3	Cui, Q. A., X. Wang, et al. (2011).	Attitude of staff, waiting time, staff's knowledge and skills, pricing,	Recentness
4	Li, D. and R. Yu (2011).	Service quality (process speed, staff skills), pricing, brand	Recentness

		image (well-known brand)	
5	Bairi, J. and B. M. Manohar (2011).	Reliability, responsibility, information provision, customer friendliness, knowledge/skills	Recentness
6	Borjalilu, N., M. Zowghi, et al. (2011).	Cost of product, communication,	Recentness
7	Zhou, L. and Q. Z. Wu (2011).	Pricing, range of goods, safe and reliable product quality, friendly service attitude, professional knowledge, complaint handling,	Recentness
8	Mukhopadhyay, I., S. K. Bandyopadhyay, et al. (2011).	SERVQUAL	Recentness
9	Anisor, N., D. Adela-Eliza, et al. (2010).	Products price, products quality, products variety and employers attitude	Recentness
10	Park, Y. and S. C. Gates (2009).	Politeness, problem resolution, knowledge, speed,	Recentness
11	Arbore, A. and B. Busacca (2009).	Functional quality: reliability, speed, accuracy, security. Relational quality: responsiveness, assurance, friendliness, courtesy, commitment, communication. Economics: price-quality ratio, price fairness.	Recentness
12	Matzler, K., J. Füller, et al. (Normcommissie_400_176_"Kwaliteitsmanagement").	Quality, safety, appearance of employees, friendliness of employees, competence of employees, helpfulness	Recentness
13	Anderson, S., L. K. Pearo, et al. (Normcommissie_400_176_"Kwaliteitsmanagement").	Interaction: helpfulness/courtesy of personnel,	Recentness

		waiting time, efficiency, timely/accurate information, responsiveness, services	
14	Füller, J. and K. Matzler (Normcommissie_400_176_"Kwaliteitsmanagement") .	Information and employees: information, friendly employees. Price quality ratio: reasonable pricing.	Recentness
15	Tang, W. W. and T. T. Zheng (2010).	Service: complaints handling, friendly trustworthy attitude, employees have good professional skills, response time. Price: price is reasonable Image: enterprise has good reputation	Recentness
16	Millán, Á. and A. Esteban (2004).	Service encounters: friendliness and politeness, accuracy of employees when providing service, ability of employees to help client, neat appearance and dress of employees. Empathy: find best options, interest in solving client's problems, understanding of specific needs, individual attention and information. Reliability: provide service within agreed time, comply with agreed promises, provide fast and flexible service, inform of the service accurately and sincerely. Efficiency of advice: precise	Times cited: 21

		knowledge of products, quantity and variety of information, direct and immediate access to information, time taken to respond to requested changes.	
17	Matzler, K., E. Sauerwein, et al. (2003).	Accuracy, reputation, speed, politeness, communic, knowledge,	Times cited: 34
18	Hasin, M. A. A., R. Seeluangsawat, et al. (2001).	Quick response, intensions to listen (seen as attention), information provision, courtesy, service,	Times cited: 43
19	Mihelis, G., E. Grigoroudis, et al. (2001).	Personnel: skills and knowledge, responsiveness, communication and collaboration, friendliness. Products: variety, costs. Image: credibility, ability to satisfy future needs (seen as competence). Service: appearance, waiting time, service processes, information	Times cited: 28
20	Siskos, Y., E. Grigoroudis, et al. (1998).	Image, service facilities, products Punctuality, products quality, service,	Times cited: 20
21	Kekre, S., M. S. Krishnan, et al. (1995).	Capability, usability, reliability	Times cited: 41
22	Al-Mutawa, T., T. Eldabi, et al. (2006).	Product: satisfaction. Price: satisfaction. Service: Reliability: employees deliver service at the right time, is dependable,	Times cited: 0 Interesting factors

		show sincere interest in solving the problem, when promises are made, they do so, keeps its records accurately. Responsiveness: employees tell exactly when services will be performed, able to provide prompt service, always willing to help, never too busy to respond to the request. Assurance: employees have knowledge to answer any questions about services, makes you trust the organization, are polite and treats you with respect, make you feel safe and comfortable when you talk with them. Empathy: employees gives individual attentions, gives personal attention, have your best interests at heart, understand your specific needs, operates at convenient hours. Tangibles: up-to-date equipment, physical facilities are visually appealing, employees are well dressed and appear neat, physical facilities appear in keeping with the

		type of services provided	
23	Burns, R. C., A. R. Graefe, et al. (2003).	Services: Availability of staff to answer questions, visibility of staff, safety and security, courteous and friendly staff, opportunity to offer suggestions to staff, adequate assistance. Information: general information, safety, ease of obtaining information, current and accurate information,	Times cited: 18 Interesting factors

Appendix VI – Workshop details

This appendix contains detailed information about the workshops conducted in Oldenzaal and Uden.

Goal

The goal of the workshops was to identify the most important factors of customer satisfaction from the experience of Nibag's project leaders (part 1) and to validate factors from literature (part 2).

Participants

The people who were invited for the workshops were project leaders from different departments, the location director and financial manager (quality coordinator) of Nibag B.V. Project leaders have contact with their customers and therefore have experienced what factors increase or decrease customer satisfaction. The director is busy trying to increase business from customers and therefore also have experienced what factors increase customer satisfaction. The participants were invited by e-mail to attend the workshop. A reminder e-mail was sent to make sure that the invited people would attend the workshop. Three project leaders, the location director and financial manager participated in the workshop held in Oldenzaal. The workshop in Uden was attended by four employees, three x project leaders and the location director of Nibag Uden.

Location

Two workshops were conducted within Nibag B.V. The first workshop was conducted at the headquarters in Oldenzaal and the second workshop was held at the other location of Nibag in Uden. Both workshops were held in a conference room. This room provided sitting places for about twelve people. Also a beamer was present. The beamer was used display a guiding presentation. The validation of factors from literature was also done using the beamer.

Approach

The workshop started with an introducing presentation. In this presentation the participants were welcomed and the research and the idea behind the workshop were presented. Also the agenda of the workshop was presented so the participants knew what to expect. Using two funny YouTube videos the attention of the participants was drawn and the topic of customer satisfaction was introduced.

Using a video from Youtube (http://www.youtube.com/watch?v=2Rw27vcTHRw&feature=related) the concept of customer satisfaction was introduced. *This video displayed a customer of a swimming pool which had lost its 'purple crocodile' toy. The crocodile was found and stored in the reception room of the swimming pool. The customer wanted to take the crocodile with her, but the receptionist said that the customer had to fill in a 'lost and found' form. When the form was filled in, the receptionist said that the form could be handed in the next morning at a different department. These regulations for receiving a swimming toy were off course ridiculous. This video showed that organizations often have regulations or protocols which are often not customer friendly. The customer in this case was not satisfied with how the swimming pool (organization) was organized.*

Another video from Youtube (http://www.youtube.com/watch?v=bK7hcJ6hA8I&feature=relmfu) showed that the requirements from organization and customers did not match. *This video showed that a mob guy searched whole Europe for the best horse for his boss. At the racing track however it* *appeared that the horse is not a racing horse, but a dressage horse. This video showed that it is very important for an organization that they know the exact requirement of their customers.*

Part 1

After the introducing presentation and the videos, the first part of the workshop took place. In this first part factors, which the participants experienced as important for customers to be satisfied, were identified.

Step 1: Identifying factors

So after the video the participants were asked to identify factors which increased or decreased customer satisfaction. The participants were asked to call factors which they think have influence on customer satisfaction. When a factor was not clear or was too vague, then more concrete information or a definition had to be provided. The researcher typed the mentioned factors on an empty document so the participants could see which factors were already mentioned. In the end of this part of the workshop a list of factors remained which were clear for the participants.

Break

After the first part of the workshop a short break was introduced. In this break the list with factors from literature were compared with the factors identified by the participants. The factors which match with each other were crossed. The distinctive factors remained on the list.

Part 2

After the break the second part of the workshop was explained in the presentation. The goal of the second part of the workshop was 'validating' the factors of customer satisfaction measurement found in the literature review. The participants of the workshop all could see a list with the grouped factors from literature. The definitions of these factors were provided on hand-outs so the participants knew what the factors were about. Factors which were addressed during the first part of the workshop, which were not identified by literature, were also included in the list.

Step 1: Discarding factors

First the project leaders were asked to identify factors which were not relevant for measuring customer satisfaction based on their experience. When a factor was not relevant it was discarded from the list.

Step 2: Ranking

After the participants had discarded the factors which they thought were not relevant, a reviewed list remained. This list needed to be ranked by the participants. The list was displayed using the beamer. The participants were asked to call five factors which, in their experience, were most important for customers. In this way a list with customer satisfaction factors was ranked on importance. When three persons participated, a factor could be indicated as important only three times. But a factor could also be indicated as not important by the participants. This does not mean that this factor was not important, but in relation to the other factors it was found less important. The participants could only indicate five factors as important.

During this second part of the workshop the project leaders were given an opportunity to discard factors concerning customer satisfaction. In this way the factors from literature were validated. In the wrap up of the workshop the participants were informed about the usage of the results and were thanked for their time and input.

Appendix VII – Interview details

This appendix contains detailed information about the interviews held with customers of Nibag.

Goal

The goal of the interview was to identify the important satisfaction factors from the customer's point of view and validating factors identified by literature.

Interviewees

Customers of Nibag were interviewed in order to gain insight in factors which satisfy them. The customers who were interviewed were identified by project leaders of Nibag. The project leaders were asked to contact two of their customers about this interview. At least one interview with customers per department was conducted in order to gain different insights. In total eight customers were addressed to participate in the interview. Two customers indicated that they were too busy and one customer did not react on the invites. So five customers from four different departments were actually interviewed by the researcher. An overview of the departments and the customers interviewed can be found in table below.

Department	Customers
Monuments care / redevelopment	Customer A
MJOP	Customer B
BPM	Customer C
Sound	Customer D
MJOP	Customer E

Approach

The interview consisted, like the workshop, of two parts. The first part consisted of letting customers identify the most important factors of customer satisfaction. The second part consisted of rating customer satisfaction factors from literature.

The interview type used is a semi-structured interview. In a semi-structured interview the questions and answers are not determined in advance, but the subjects are. An open starting question and asking questions to gain additional information were used to address the subjects. Now the two parts of the interview will be described.

Part 1

The first part of the interview consisted of identifying factors which satisfy and dissatisfy customers towards organizations. The customers were asked to mention factors which satisfy them towards organizations. In order to structure the interviews the customers were asked to identify factors based on three phases of a project: before, during and after a project. The customers were also asked to think of factors which satisfy them in projects which went great and factors which dissatisfy them in projects which went wrong.

At the end of this first part of the interview the customer had identified which factors satisfy and dissatisfy them regarding organizations which provide professional services on housing management.

Part 2

The second part of the interview consisted of validating the factors found in literature. A list with factors found in the literature review along with its definitions was provided to the customer.

Step 1: Discarding factors

The factors which were mentioned in the first part of the interview were crossed in the list. In this way only the factors found in literature, which were not mentioned by the customer, remained. The customer was then asked to review these factors on relevancy. The factors which were not identified as relevant were discarded from the list.

Step 2: Ranking

After reviewing the factors one list with factors remained. The customer was asked to indicate five factors which were the most important for them. The customer had to indicate exactly five factors.

After the second part of the interview the customer had reviewed factors from literature and by selecting five factors the list was ranked on importance.

Appendix VIII - Workshop results

This appendix contains the results of the workshops held within Nibag Oldenzaal and Nibag Uden. First the results of the workshops held in Oldenzaal and Uden are addressed separately. Next the results are aggregated in order to provide a combined result of the workshops.

Workshop results separated

Factors identified by Nibag Oldenzaal and Uden

During the workshops the participants identified, from their experience, the following factors which could influence customer satisfaction.

Nibag Oldenzaal **29-10-2012**	**Nibag Uden** **09-11-2012**
Listening to the customer – meet customer requirements	Meet the requirements
Communication during projects - Short communication lines - One contact person	Planning
Quality - Providing the right services	Transparancy / keeping the customer informed
Price - Transparency	Quality of a product / service
Keeping agreements	Communication
Having a connection with each other (in Dutch 'een klik hebben')	Good alignment / expectation management
Reliability	Take control in a project. Make sure that customers can trust the organization.
Being pro-actief (think along with customers) - Provide extra service	Flexibility
Communication after the project	Take care of customers after a project (in Dutch 'nazorg')
	Price-quality ratio
	Personal connection (in Dutch persoonlijke 'klik')
	Attention
	Provide added value
	Presentation of product / service

Factors identified by Nibag Oldenzaal and Uden compared with factors identified by literature

The next table contains the factors identified by Nibag compared with the factors identified by literature. The first column contains the factors identified by literature. Behind the factor, between brackets, factors identified by Nibag are mentioned when they relate to each other. The second column contains the factors which are mentioned by literature, but not mentioned by Nibag. The third column indicates if Nibag finds the factors from the second table relevant. The fourth column contains factors which are identified by Nibag and not by literature.

Nibag Oldenzaal

Factors addressed by Nibag and by literature	Factors not mentioned by Nibag, but mentioned by literature	Relevancy of the factors not mentioned by Nibag, but mentioned by literature	Factors mentioned by Nibag and not mentioned by literature
Reliability (quality, keeping agreements, reliability)	Tangibles	Yes	Additional services / being pro-active
Responsiveness (short communication lines)	Assurance	Yes	
Empathy (having a personal connection)	Competencies	Yes	
Communication (Listening to the customers, communication during and after the project)	Flexibility	Yes	
Price (Price, transparency)	Project management	Yes	

Nibag Uden

Factors addressed by Nibag and by literature	Factors not mentioned by Nibag, but mentioned by literature	Relevancy of the factors not mentioned by Nibag, but mentioned by literature	Factors mentioned by Nibag and not mentioned by literature
Reliability (quality)	Responsiveness	Yes	Taking care of customers after a project ('Nazorg') / provide added value
Empathy (personal connection, attention)	Competencies	Yes	
Tangibles (presentation of products / services			
Assurance (take control in a project, create trust)			
Communication (communication, keep customers informed)			
Flexibility (flexibility)			
Price (Price-quality ratio)			
Project management (planning, expectation management)			

* The extra factors taking care of customers after project ('Nazorg') is combined with the factor provide added value. This was done because the provision of extra care can be seen as added value.

Factors ranked on importance by Nibag Oldenzaal and Uden

This table contains the factors from literature and factors which are mentioned by Nibag and not mentioned within literature. The factors were ranked by Nibag on importance. Five persons attended the workshop in Oldenzaal and eight people attended the workshop in Uden.

Factors	Importance ranking according Nibag Oldenzaal	Importance ranking according Nibag Uden
Reliability	5x	7x
Responsiveness	1x	5x
Empathy	2x	-
Tangibles	-	-
Assurance	3x	3
Competencies	2x	2
Communication	3x	7
Flexibility	2x	2
Price	4x	6
Project management	3x	3
Being Pro-active of Extra service / provide added value	-	3
Taking care of customers after a project ('Nazorg')	Not mentioned	2
Total	25	40

Aggregation of workshop results

The results of the two workshops were aggregated in order to compare the results of interviews and literature with Nibag as a whole organization. This table contains the aggregation of factors identified by Nibag.

Factors identified by Nibag

Factors identified by Nibag
Listening to the customer – meet customer requirements
Communication during projects - Short communication lines - One contact person - keeping the customer informed
Quality - Providing the right services
Price - Transparency
Keeping agreements
Having a connection with each other (in Dutch 'een klik hebben')
Reliability
Being pro-active (think along with customers) - Provide extra service

Communication after the project
Planning
Good alignment / expectation management
Take control in a project. Make sure that customers can trust the organization.
Flexibility
Take care of customers after a project (in Dutch 'nazorg')
Attention
Provide added value
Presentation of product / service

Factors identified by Nibag compared with factors identified by literature

The next table contains the factors identified by Nibag compared with the factors identified by the literature. The first column contains the factors identified by literature. Behind the factor, between brackets, factors identified by Nibag are mentioned when they relate to each other. The second column contains the factors which are mentioned by literature, but not mentioned by Nibag. The third column indicates if Nibag finds the factors from the second table relevant. The fourth column contains factors which are identified by Nibag and not by literature.

Factors addressed by Nibag and by literature	Factors not mentioned by Nibag, but mentioned by literature	Relevancy of the factors not mentioned by Nibag, but mentioned by literature	Factors mentioned by Nibag and not mentioned by literature
Reliability (reliability, keeping agreements, providing right services)	Competencies	Yes	Being Pro-active of Extra service / provide added value
Responsiveness (short communication lines, one contact person)			
Empathy (personal connection, attention)			
Tangibles (presentation of product / service)			
Assurance (take control in project, create trust with customer)			
Communication (communication after project, keep customers informed)			
Flexibility (flexibility)			
Price (price quality ratio, transparency)			
Project management (planning, expectation			

management)

Aggregation of importance rankings

This table contains the aggregation of importance rankings of the identified factors.

Factors	Importance ranking by Nibag	In percentage
Reliability	12	0,1846%
Communication	10	0,1538%
Price	10	0,1538%
Responsiveness	6	0,9023%
Project management	6	0,9023%
Assurance	6	0,9023%
Provide added value*	5	0,077%
Competencies	4	0,0615%
Flexibility	4	0,0615%
Empathy	2	0,0462%
Tangibles	0	0%
Total	65	100%

* The factor provide added value contains several elements. These elements are being proactive, provide extra service and taking care of customers after project (‘Nazorg’). This is because these three aspects are all types of added values. The importance rankings were added together.

Appendix IX - Interview results

This appendix contains the results of the customer satisfaction interviews conducted with five customers of Nibag.

Factors identified by customers of Nibag

The factors are placed in the table in a random order. Each column consists of a customer and the factors which he had identified.

Customer A	Customer B	Customer C	Customer D	Customer E
Personal contact	Clarity	Making clear agreements	Price	Contact with organization
Quickness of the process (needs to be as short as possible)	Keeping each other informed	Quick response	Price quality	Trust
Price	quality	Reaching customers (contact)	Planning	Good price (price policy)
quality	Communication (define agreements)	Knowledge	Time	Agreement is agreement
Price-quality ratio	Contact during projects	Being good communicators	Relation with customers	Receiving information
Correctness	Price-quality. Customer indicates that he wants to pay more for good quality	Take responsibility	Knowledge	Time
Clarity	Provide customers what is agreed on	Focussed on result	Professionalism	Closing of a project
Taking care of customers after projects (‘Nazorg’)		Feedback	Informing customers (feedback)	‘Nazorg’
		Operate independently	Communication	Accessibility (contact)
		Objective	Keeping agreements	Price
		Good (content of) end report	Extra service	Clarity
		Thinking with customer show to help them (information needs to be correct. This	Trust	Completeness

	makes room for trust		
	Listening to customers	Delivering of good product/service	Quality
	Flexibility	Reaching customers (contact)	Neat appearance of some reports
	Price (transparency)		
	Having a personal connection (‘klik’ hebben)		
	Price-quality		

Factors of Nibag’s customers compared with factors from literature

The next table contains the factors identified by customers of Nibag compared with the factors identified by literature. The first column contains the factors identified by literature. Behind the factor, between brackets, factors identified by customers are mentioned when they relate to each other. The second column contains the factors which are mentioned by literature, but not mentioned by customers of Nibag. The third column indicates if customers of Nibag finds the factors from the second table relevant. The fourth column contains factors which are identified by customers of Nibag and not by literature.

Customer A

Factors addressed by customer and by literature	Factors not mentioned by customer, but mentioned by literature	Relevancy of the factors not mentioned by customer, but mentioned by literature	Factors mentioned by customer and not mentioned by literature
Reliability (correctness, quality)	Empathy	Yes	Taking care of customers after projects (‘Nazorg’) Nazorg. An example: The climate control of a school was not working correct. The customer called the responsible person. This person was working twelve days to fix the climate control. The customer of Nibag did not have to pay a thing. This made the

			customer satisfied.
Responsiveness (quickness)	Tangibles	No. Not important. It does not matter to the customer whether he appears in 'old clothes' or dressed in suit. The appearance of documents does also not matter. The content is more important.	
Communication (clarity, personal contact)	Assurance	Yes	
Price (price, price-quality ratio)	Competencies	Yes	
	Flexibility	Yes	
	Project management	Yes	

Customer B

Factors addressed by customer and by literature	**Factors not mentioned by customer, but mentioned by literature**	**Relevancy of the factors not mentioned by customer, but mentioned by literature**	**Factors mentioned by customer and not mentioned by literature**
Reliability (provide what is agreed on)	Responsiveness	Yes	
Communication (Keeping each other informed, contact during projects	Empathy	Less relevant. The organization has to come up with results, not saying that they empathize.	
Price (price-quality ratio)	Tangibles	Yes	
Project management (contact during projects, keeping each other informed)	Assurance	Yes	
	Competencies	Yes	
	Flexibility	Yes, it relates to the price	

Customer C

Factors addressed by customer and by literature	**Factors not mentioned by customer, but mentioned by literature**	**Relevancy of the factors not mentioned by customer, but**	**Factors mentioned by customer and not mentioned by literature**

		mentioned by literature	
Reliability (reliability, correctness)	Tangibles	Less important	
Responsiveness (quick response, accessibility)	Project management	Yes	
Empathy			
Assurance			
Competencies			
Communication (reaching customers, communication, informing customers)			
Flexibility			
Price			

Customer D

Factors addressed by customer and by literature	Factors not mentioned by customer, but mentioned by literature	Relevancy of the factors not mentioned by customer, but mentioned by literature	Factors mentioned by customer and not mentioned by literature
Reliability (reliability, delivering of good products/services, keeping agreements)	Empathy	Yes	Extra service
Responsiveness (time)	Tangibles	Yes	
Assurance (relationship with customers, trust)	Flexibility	Less relevant. When things change, customer has to pay more	
Competencies (knowledge, professionalism)			
Communication (communication, feedback)			
Price (price, price-quality ratio)			
Project management (planning)			

Customer E

Factors addressed by customer and by literature	Factors not mentioned by customer, but mentioned by	Relevancy of the factors not mentioned by	Factors mentioned by customer and not mentioned by

	literature	customer, but mentioned by literature	literature
Reliability (quality, agreement is agreement)	Empathy	Yes	'Nazorg'
Responsiveness (time)	Competencies	Yes	
Assurance (trust)	Flexibility	Yes (customer indicated that flexibility comes from both sides. Him as customer and the organization)	
Tangibles (appearance of reports)			
Communication (receiving information, contact with organization, accessibility, clarity, completeness)			
Price (price policy)			
Project management (closing of project)			

Importance of factors indicated by customers of Nibag

These tables contain the factors from literature and factors which are mentioned by customers of Nibag and not by literature. The factors were ranked by customers of Nibag on importance. The five customers of Nibag indicated the five most important factors concerning customer satisfaction.

Customer A

Factors	Importance ranking according Customer A
Reliability	X
Responsiveness	
Empathy	X
Tangibles	
Assurance	X
Competencies	
Communication	X
Flexibility	
Price	X
Project management	
Taking care of customers after project ('Nazorg')	

Customer B

Factors	Importance ranking according Customer B
Reliability	X
Responsiveness	X
Empathy	
Tangibles	
Assurance	
Competencies	X
Communication	X
Flexibility	
Price	
Project management	X

Customer C

Factors	Importance ranking according Customer C
Reliability	X
Responsiveness	
Empathy	
Tangibles	
Assurance	X
Competencies	X
Communication	X
Flexibility	
Price	
Project management	X

Customer D

Factors	Importance ranking according Customer D
Reliability	X
Responsiveness	
Empathy	
Tangibles	
Assurance	
Competencies	X
Communication	X

Flexibility	
Price	X
Project management	X
Extra service	

Customer E

Factors	Importance ranking according Customer E
Reliability	X
Responsiveness	
Empathy	
Tangibles	
Assurance	
Competencies	X
Communication	X
Flexibility	
Price	X
Project management	X
'Nazorg'	

Total importance ranking

Factors	Importance ranking of the five customers	In percentage
Reliability	XXXXX (5)	20%
Responsiveness	X	4%
Empathy	X	4%
Tangibles		0%
Assurance	XX	8%
Competencies	XXXX	16%
Communication	XXXXX (5)	20%
Flexibility		0%
Price	XXX (3)	12%
Project management	XXXX	16%
Provide added value		0%
Total	25	100%

* Two extra factors were identified by the customers (taking care of customers after a project and extra service). Both factors were not indicated as the most important factor. The factors were combined together because taking care of customers after a project can be seen as an extra service. Extra service is seen as added value, so therefore the factor is called 'provide added value'.

Appendix X – Dutch translation of operationalized factors

This appendix contains the Dutch translation of the operationalization of factors used in this research. The table contains the different factors and the corresponding items. The factors are operationalized to questions.

Construct	Items	Geoperationaliseerd
Betrouwbaarheid	Betrouwbaarheid Accuraatheid	- Medewerkers van Nibag verlenen hun diensten op het beloofde tijdstip - Bij optreden van problemen tonen medewerkers van Nibag oprechte belangstelling in het oplossen daarvan - Medewerkers van Nibag besteden moeite aan een correcte administratie van werkzaamheden - Medewerkers van Nibag dragen, vanaf de eerste samenwerking, zorg voor een goede dienstverlening
Competenties	Competenties Kennis Vaardigheden	- Medewerkers van Nibag beschikken over de benodigde kennis om u van dienst te kunnen zijn - Medewerkers van Nibag B.V. beschikken over de juiste vaardigheden om u van dienst te zijn - Medewerkers van Nibag beschikken over genoeg professionaliteit om u van dienst te kunnen zijn
Communicatie	Communicatie Aanleveren van informatie Toegankelijkheid	- Medewerkers van Nibag zijn duidelijk in hun communicatie - Medewerkers van Nibag zijn volledig in het bieden van informatie - Medewerkers van Nibag luisteren en begrijpen u als klant - Medewerkers van Nibag zijn gemakkelijk te benaderen - Medewerkers van Nibag houden u op de hoogte van de voortgang / levering van diensten
Prijs	Prijs-kwaliteit Daadwerkelijke prijs Prijsbeleid (totstandkoming van prijzen)	- De prijs-kwaliteit verhouding van diensten geleverd door Nibag is goed - Nibag is goedkoop ten opzichte van concurrenten - De prijzen die Nibag hanteert voor haar diensten zijn transparant
Project management	Project management is de toepassing van kennis vaardigheden, tools en technieken op de activiteiten van projecten om zo te voldoen aan eisen van het project. De	- Projecten worden door medewerkers van Nibag goed voorbereid - Projecten worden door medewerkers van Nibag goed gepland - Projecten worden door medewerkers van Nibag goed uitgevoerd Projecten worden door medewerkers

	toepassing van kennis vraagt om de beheersing van geschikte processen.	van Nibag goed gemonitord en gecontroleerd - Na afronding van projecten wordt er voldoende nazorg geboden

Appendix XI – Research method selection

This appendix contains the detailed description of research method selection for this research. Customer satisfaction can be measured with different methods. These research methods are applicable for solving practical problems. Research methods are more reliable than when you are relying on common sense, experience, expert opinion or consensus. Research methods can also be used for fact-based decision making, because it is based on evidence (data) rather than intuition. Research methods can be applied in practice in different situations. These differences can be assigned to generality: focused on solving a specific problem in a specific context rather than producing more general knowledge, time constraints, onus of proof: requirements for evidence less stringent and role of theory: apply existing theories rather than developing new ones (Moody & Mueller, 2009). Moody & Mueller (2009) provide, in their course Information Systems Research Methods taught at the University of Twente, different research methods. These research methods are:

- Action research.
- Case Study.
- Experiment.
- Non-reactive.
- Survey.

The advantages, disadvantages and usage of the different research methods are described more in detail in the next table.

Research Method	Advantages	Disadvantages	Use
Action Research	- Allows research ideas to be tested in organizational contexts using real practitioners - Allows ideas to be refined using an iterative learning approach (not just yes/no answers) - Promotes collaboration between research and practice - More viable than field experiments in most IS contexts	Internal validity: - Lack of control group (placebo effect) - Subjectivity of results - Reliance on perceptions of stakeholders - Researcher as a possible confounding variable - Difficulty for researchers to remain unbiased External validity: - Difficulty of generalising from individual cases	A research method in which researchers work with practitioners to test and refine research ideas designed to solve practical problems: - Provides a way of testing research ideas by applying them in practice - Systematic method for learning from experience - Has a history of successful application in education, health care and psychology

Case Study	- Suitable for providing answers on research questions when the research question is of a "how" (process) or "why" (explanatory) nature - When the relevant phenomena cannot be manipulated or simulated in a laboratory, then case studies are suitable. - When there are too many variables for quantitative methods to deal with effectively, then case studies are suitable.	Considered a "poor cousin" among research methods because of its lack of rigour: - Subjectivity of analysis (qualitative) - Possibility of alternative explanations of results (passive, non-causal) - Inability to replicate - Inability to generalise from single situations (every situation is unique)	In-depth investigation of some real life phenomena in a natural setting - Systems development projects - Dot com startups - Very difficult to realistically simulate such situations in a laboratory
Experiment	- Ability to establish causal relationships - Ability to control extraneous variables (internal validity) - Ability to create combinations of circumstances which would be unlikely to occur naturally in practice - Ability to replicate results	- Not all questions can be investigated using experiments for practical or ethical reasons - Artificiality of setting or task - Artificiality of participants (sample population) - Difficulty and cost of recruiting suitable participants	Examines effect of one or more independent variables on one or more dependent variables: - Independent variable(s) = experimental treatment(s) - Dependent variable(s) are the expected outcome(s) of the treatment - Controlled variables: all other variables held constant
Non-reactive	- Avoids Hawthorne effect (act of observing a	- Not suitable in each research field due to lack of publicly	Non-reactive methods can be used for - unobtrusive

	phenomenon changes it) - Can be based both on field or laboratory research - Used as both quantitative as qualitative research	available data or publicly observable behaviour. -	observation: observing behaviour or evidence of behaviour - Content analysis: analysis of document content - Existing statistics/records: analysis of public statistics or records - Secondary analysis: synthesis of research.
Survey	- Efficient way of gathering information about a population. - Survey can be used for description, explanation or prediction. - Opinions, feelings, behaviours and intentions can easily be measured.	- Requires a lot of hard work and attention to detail to get good response rates. - Becomes less effective, when response rate is low. - Surveys subject to bias and manipulation (biased samples, biased questions) - People's perceptions are not reality - What people say is not necessarily what they think or do?	An analysis of practices, situations or attitudes at a point in time: - Same set of questions asked of a large number of people or organizations (representative sample or whole population) - An efficient way of gathering information about a population - Statistical methods used to draw inferences from sample to whole population

A brief summary of the research methods is given in the table below. This table contains the method name, the setting in which the method is used, the data type and the role of the researcher. The setting consists of either field or laboratory research. Field research is often preferable to laboratory research for reasons of external validity, but field research it is not always possible in practice. The data type consists of qualitative and quantitative research. With quantitative research data is collected in the form of numbers. Statistical techniques are used to identify patterns and relationships in the data. Quantitative research also emphasises objectivity, measurement and hypothesis testing. Qualitative research on the other hand collects data in the form of words, sounds and images. The analysis is more subjective because it relies on researcher's knowledge and experience to identify patterns and draw conclusions. With qualitative research the data can be interpreted in alternative ways. The role of the researcher can be either passive or active. When the researcher is passive, he or she has no influence on what happens. After the event, the cause and effect are investigated. When the researcher is active he or she makes changes and observes the results (Moody & Mueller, 2009).

Method	Setting	Data Type	Role
Action research	Field	Qualitative	Active
Case study	Field	Qualitative	Passive
Experiment	Laboratory	Quantitative	Active
Non-reactive	Laboratory	Quantitative	Passive
Survey	Field	Quantitative	Passive

Appendix XII - Instrument type selection

This appendix contains the detailed description of the instrument type used for this research. As can be read in the previous section a survey is selected as research method for this research. Surveys exist in different types and can be conducted in different ways. Moody & Mueller, 2009 divide surveys into three types: self-administered (such as mail, email and internet), telephone and face to face interviews. Each type has its advantages and disadvantages. The table below provides an overview of these advantages and disadvantages.

Type	Advantages	Disadvantages
Self-administered	- Cheapest option - Can cover a wide geographical area - Anonymity - Avoid interviewer bias	- Response rates and completeness of responses - Time delays (mail)
Telephone	- Geographical coverage - Fast - High response rate	- More expensive - Reduced anonymity - Possible interviewer bias - Limited interview length
Face to face interview	- Highest response rates - Longest questionnaires - Completeness and accuracy of responses	- High cost: training, travel, personnel costs - Potential for interviewer bias - Reduced anonymity

Based on the types of surveys, additional literature is searched. This literature contains the comparison of telephone surveys with web surveys and face to face interviews with web surveys. The additional literature can help in selecting the most suitable survey for this research.

Roster, Rogers Albaum & Klein (2004) compared telephone surveys with web surveys and acknowledged the fact web surveys are faster, cheaper and produce larger samples compared to telephone surveys. They also state that their findings also lend support to the notion that web surveys may be equally, if not more, accurate than telephone surveys in predicting behaviours.

Duffy, Smith, Terhanian & Bremer (2005) compared face to face interviews with web surveys and found out that both methods have their advantages and disadvantages but despite of the limitations (such as during the survey containing knowledge questions, people who are filling in a survey online can find information using internet. People who are being interviewed face to face do not have the possibility to search for information) web surveys will substantially grow over the next few years. Face-to-face respondents are also more susceptible to social desirability bias due to the presence of an interviewer. Duffy et al. (2005) also state that for some areas of study, well designed internet-based surveys with appropriate weighting strategies can produce similar results to well-designed face-to-face surveys.

Appendix XIII - Web-based survey application selection

This appendix contains the detailed description of the web-based survey application selection. Each online survey application has its own functionalities and prices. An internet research on online survey applications resulted in several interesting applications. Via forums and websites five online survey applications were identified as interesting for this research. These applications were: SurveyMonkey, SurveyGizmo, LimeSurvey, Sogosurvey and Surveytool.com. The table contains the five applications checked on selection criteria which consisted of costs, usability and layout.

Also important for selecting the right survey application were the following three criteria:

- The development of the survey with the application,
- Using the application in conducting online surveys with customers and
- The analysis of results of the survey with the application.

Application	Costs	Usability	Layout	Remarks
SurveyMonkey	Free (10 questions / 100 reactions) €25 / month (unlimited number of questions / 1000 reactions)	Not checked	Not special	
SurveyGizmo	Free (unlimited surveys / 250 responses) €75 / month (unlimited questions / responses)	Good	Good	
LimeSurvey	Free	Some time is needed in order to understand the application	Adequate	
Sogosurvey	Free (10 surveys / 50 questions / 100 responses) $14 /	Not checked	Good	Contains a pool of respondents: Not necessary for this research,

	month (unlimited surveys / questions / responses)			but also own e-mail addresses could be added
Surveytool.com	Free (3 surveys / 100 responses per survey / 50 e-mail addresses per survey) Basic (20 surveys per month / 300 responses per survey / 500 e-mail addresses)	Not checked	Adequate	Contains a pool of respondents: not necessary for this research

By browsing the websites of five online survey applications a selection was made of two applications which could be interesting to use in this research. The selection was based on several criteria: costs, usability and layout. By using a demo version of the application the usability and layout of the product could be tested. The usability is important because the researcher and the company should be able to quickly learn how the application works and the application should be easy to understand. The layout of the application is also important. This is because a clear layout increases the understandability of the application and a good looking survey is more attractive for the people who are surveyed and therefore these people are more likely to fill in the survey. The two selected applications were LimeSurvey and SurveyGizmo.

LimeSurvey (formerly PHP Surveyor) is an open source online survey application distributed under the GNU General Public License (which is a free software license). LimeSurvey is designed to be user-friendly, it enables users to develop and publish surveys, and collect responses without doing any coding. There are no costs attached using LimeSurvey, but you have to grant the rights of the product to other people and you have to mention the author of the product. Sometime needs to be invested in order to understand the functions of LimeSurvey. After the functions were clear, a survey could be quickly realized. The layout of the survey was very functional. It was not special, but it was suitable.

SurveyGizmo is a survey tool for marketers, consultants and business professionals. SurveyGizmo tries to be affordable, rich with features and easy to use. SurveyGizmo can be acquired in three different types. There is a free application, a ‘normal’ application and a dedicated application. Each type differs from price and functionality. The more you pay for the application, the more functionality you get. The free application type contains enough suitable functionality and allows one to create unlimited surveys. The drawback is the limit of 250 responses per survey. The survey application is easy to understand and to use. A technique which increases the easiness is dragging and dropping. Without coding a survey can easily be constructed. SurveyGizmo consists of different templates and multiple design options. In this way the survey can be customized with a clear design. The layout of the survey looks fine which can stimulate the surveyed people to actually fill in the survey. A good layout could also increase the professional appearance of the organization.

Based on the trial version with LimeSurvey and SurveyGizmo selection could be made. In this research SurveyGizmo is chosen as online survey application. In comparison with LimeSurvey, SurveyGizmo was easier to understand and also the usability was better. SurveyGizmo showed a clear structure of the survey. Questions could easily be added or removed using a drag and drop function. Using the preview function a detailed display of the survey was given. The designer could immediately check if the layout met the requirements. SurveyGizmo follows a clear step-by-step structure in order to create a good survey. First the goals could be identified and by using a brainstorm ideas could be proposed (this was not done in this research. The goals were already clear). The next step was creating and editing the survey. When the survey was created it could be distributed. The survey could be distributed by different communication channels such as social media and e-mail. After this step the results could be viewed. Each answer of a respondent could be viewed in detail. The last step was analysing and reporting the results. This step provided a clear summary of the results. Also a comparison could be made based on selected questions. The free version of SurveyGizmo had less functions in comparison with the paid variants. However the three main required functions of an online survey application (development, conducting and analysis of the survey) could be sufficiently addressed in order to label SurveyGizmo as a suitable online survey application.

Appendix XIV - Customer satisfaction survey

This appendix contains the e-mail with the invitation for the survey and the actual survey which was applied in practice.

Invitation e-mail

Geachte heer/mevrouw [klant],

Nibag B.V. is continu bezig met het verbeteren van haar dienstverlening. Door middel van deze vragenlijst wil Nibag B.V. de klanttevredenheid meten. De resultaten worden gebruikt om onze dienstverlening verder te verbeteren. Het invullen van de vragenlijst neemt ongeveer 5 minuten in beslag. Uw medewerking wordt zeer op prijs gesteld.

Door op de volgende link te klikken, of deze te kopiëren in de adresbalk van uw internetbrowser, kunt u de vragenlijst invullen:

http://edu.surveygizmo.com/s3/1099384/Nibag-Klanttevredenheidsonderzoek

* Let op: De vragenlijst wordt verkeerd weergegeven in Internet Explorer 9 wanneer in de Google toolbar de automatische vertaalfunctie is ingeschakeld. Ik verzoek u daarom deze in dit geval uit te schakelen.

Bi voorbaat dank, namens Nibag B.V.,

Leon Bovenmars

Reminder invitation e-mail

Geachte heer/mevrouw [klant],

Op 7 december jl. heb ik u, namens Nibag B.V., een verzoek gestuurd om mee te doen aan een onderzoek naar de klanttevredenheid van Nibag. Uw ingevulde vragenlijst hebben wij nog niet mogen ontvangen en wij verzoeken u daarom vriendelijk om daarvoor enkele minuten vrij te maken.

Met behulp van uw ervaringen kan de kwaliteit van de dienstverlening in kaart worden gebracht én verbeterd worden. Tot op heden heeft 35% van de deelnemers de vragenlijst al ingevuld.

Uw medewerking wordt zeer op prijst gesteld.

Door op de volgende link te klikken, of deze te kopiëren in de adresbalk van uw internetbrowser, kunt u de vragenlijst invullen: http://edu.surveygizmo.com/s3/1099384/Nibag-Klanttevredenheidsonderzoek

*Let op: De vragenlijst wordt onjuist weergegeven in Internet Explorer 9 wanneer in de Google toolbar de automatische vertaalfunctie is ingeschakeld. Ik verzoek u daarom deze in dit geval uit te schakelen.

Bij voorbaat dank, namens Nibag B.V.,

Leon Bovenmars

Actual survey

Nibag Klanttevredenheidsonderzoek

Nibag B.V. is continu bezig met het verbeteren van haar dienstverlening. Door middel van deze vragenlijst wil Nibag B.V. de klanttevredenheid meten. De resultaten worden gebruikt om onze dienstverlening verder te optimaliseren. Het invullen van de vragenlijst neemt ongeveer 5 minuten in beslag. Uw medewerking wordt zeer op prijs gesteld.

De vragenlijst kan gestart worden door op de 'Next' knop te drukken.

Bij voorbaat dank, namens medewerkers en directie Nibag B.V.

* Let op: indien de Google toolbar vertaalfunctie (IE9) ingeschakeld is, kan de pagina verkeerd worden weergegeven. Schakel in dit geval de automatische vertaalfunctie uit.

Algemene informatie

1) Wat is de naam van uw organisatie of de organisatie waar u werkzaam voor bent?*

____

2) Van welk team heeft u diensten afgenomen?*

Er is slechts één keuze mogelijk

( ) Monumentenzorg / Herbestemming

( ) Veiligheid

( ) Energie

( ) Bouwprojectmanagement

( ) MJOP (Meerjaren onderhoudsplanning)

( ) Geluid

( ) Ontwerp advies

3) Datum ingevuld*

____

**De vragen gemarkeerd met een * zijn verplicht*

Betrouwbaarheid

Deze vragen gaan over de betrouwbaarheid. Betrouwbaarheid wordt gedefinieerd als:
Het vermogen om de gemaakte afspraken na te komen.

4) Medewerkers van Nibag verlenen hun diensten op het beloofde tijdstip*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

5) Bij optreden van problemen tonen medewerkers van Nibag oprechte belangstelling in het oplossen daarvan*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

6) Medewerkers van Nibag besteden moeite aan een correcte administratie van werkzaamheden*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

7) Medewerkers van Nibag dragen, vanaf de eerste samenwerking, zorg voor een goede dienstverlening*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

Competenties

Deze vragen gaan over de competenties. Competenties worden gedefinieerd als:
De vaardigheden, ervaring en professionaliteit waarmee de service is geleverd. Hieronder valt het uitvoeren van correcte procedures, correcte uitvoering van klantinstructies, de mate van product- of servicekennis van de organisatie, goed advies en de algemene eigenschap om goed werk te leveren.

8) Medewerkers van Nibag beschikken over de benodigde kennis om u van dienst te kunnen zijn*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

9) Medewerkers van Nibag B.V. beschikken over de juiste vaardigheden om u van dienst te zijn*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

10) Medewerkers van Nibag beschikken over genoeg professionaliteit om u van dienst te kunnen zijn*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

Communicatie

Deze vragen gaan over de communicatie. Communicatie wordt gedefinieerd als:
De eigenschap van de organisatie om te communiceren met een klant op een manier die zij begrijpt. Hieronder valt de duidelijkheid, volledigheid en correctheid van zowel verbaal als geschreven informatie en de eigenschap van de organisatie om te luisteren naar klanten en klanten te begrijpen.

11) Medewerkers van Nibag zijn duidelijk in hun communicatie*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

12) Medewerkers van Nibag zijn volledig in het bieden van informatie*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

13) Medewerkers van Nibag luisteren en begrijpen u als klant*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

14) Medewerkers van Nibag zijn gemakkelijk te benaderen*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

15) Medewerkers van Nibag houden u op de hoogte van de voortgang / levering van diensten*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

Prijs

Deze vragen gaan over het prijsbeleid.

16) De prijs-kwaliteit verhouding van diensten geleverd door Nibag is goed*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

17) Nibag is goedkoop ten opzichte van concurrenten*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

18) De prijzen die Nibag hanteert voor haar diensten zijn transparant*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

Project management

Deze vragen gaan over projectmanagement. Projectmanagement wordt gedefinieerd als:
De toepassing van kennis, vaardigheden, tools en technieken om zo te voldoen aan de eisen van het project.

19) Projecten worden door medewerkers van Nibag goed voorbereid*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

20) Projecten worden door medewerkers van Nibag goed gepland*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

21) Projecten worden door medewerkers van Nibag goed uitgevoerd*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

22) Projecten worden door medewerkers van Nibag goed gemonitord en gecontroleerd*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

23) Na afronding van projecten wordt er voldoende nazorg geboden*

( ) Zeer eens

( ) Eens

( ) Neutraal

( ) Oneens

( ) Zeer oneens

Extra opmerkingen

24) Heeft u nog suggesties die helpen om de dienstverlening van Nibag te verbeteren?

In de ruimte hieronder kunt u deze suggesties invullen.

Wanneer u klaar bent met het invullen van deze vragenlijst kunt u door op 'Submit' te klikken de resultaten inleveren.

Hartelijk dank voor het invullen van deze vragenlijst. De resultaten zullen worden gebruikt om u in de toekomst beter van dienst te kunnen zijn. U kunt nu de pagina afsluiten.

Nibag B.V.

Appendix XV – IPA Tool programming code

This appendix contains the Visual Basic programming code which is used in the IPA tool.

```
Sub hide_Departments_Not_Selected() 'Zorgt ervoor dat op basis van gemaakte keuzes de juiste resultaten
overblijven
Dim IPA As Worksheet
Set IPA = ThisWorkbook.Sheets("IPA")
Dim Blad3 As Worksheet
Set Blad3 = ThisWorkbook.Sheets("Blad3")
'Selectie op basis van Afdeling (Lijst met klantgegevens wordt geselecteerd op basis van ingevoerde afdeling)

If IPA.Cells(4, 2) <> "Kies Dienst" Then
   For i = 3 To 100
   If Cells(i, 6) <> IPA.Cells(4, 2) Then
   Cells(i, 3).EntireRow.Hidden = True
   End If
Next i
End If

'Selectie op basis van Klant (Lijst met klantgegevens wordt geselecteerd op basis van ingevoerde Klant)
If IPA.Cells(2, 2) <> "Kies Klant" Then
   For i = 3 To 100
   If Cells(i, 1) <> IPA.Cells(2, 2) Then
   Cells(i, 1).EntireRow.Hidden = True
   End If
Next i
End If

'Selectie op basis van Datum (Lijst met klantgegevens wordt geselecteerd op basis van ingevoerde Datum)
If IPA.Cells(3, 2) <> "Kies Datum" Then
   For i = 3 To 100
   If Cells(i, 2) <> IPA.Cells(3, 2) Then
   Cells(i, 2).EntireRow.Hidden = True
   End If
Next i
End If

'Selectie op basis van Jaar (Lijst met klantgegevens wordt geselecteerd op basis van ingevoerde Jaar)
If IPA.Cells(5, 2) <> "Kies Jaar" Then
   For i = 3 To 100
   If Cells(i, 5) <> IPA.Cells(5, 2) Then
   Cells(i, 5).EntireRow.Hidden = True
   End If
Next i
End If

'Selectie op basis van Maand (Lijst met klantgegevens wordt geselecteerd op basis van ingevoerde Maand)
If IPA.Cells(6, 2) <> "Kies Maand" Then
   For i = 3 To 100
   If Cells(i, 4) <> IPA.Cells(6, 2) Then
   Cells(i, 4).EntireRow.Hidden = True
   End If
Next i
End If

'Vult extra opmerkingen sectie met extra opmerkingen. Eerst worden de extra opmerkingen verwijderd omdat er
anders duplicaten in de lijst komen
Call Extra_opmerkingen_verwijderen
For i = 3 To 100

'Wanneer de rijen zichtbaar zijn worden de extra opmerkingen in Klantgegevens kolom o in IPA op rij 22 kolom 9
geplaatst
If Cells(i, 12).EntireRow.Hidden <> True Then
IPA.Cells(19 + i, 9) = Cells(i, 12)
End If
```

```
Next i

'Roept de methode extra_opmerkingen_ipa_sorteren aan.
Call Extra_opmerkingen_IPA_sorteren

'Wanneer er meerdere metingen zijn, wordt er gevraagd of datums moeten worden ingevoerd. Wanneer er geen
metingen zijn op basis is van criteria
'dan wordt er een foutmelding gegeven.
If IPA.Cells(2, 5) > 1 Then
iRet = MsgBox("Er zijn meerdere metingen gevonden. Wilt u een specifieke datum selecteren?", vbYesNo,
"Specifieke datum selectie")
    'Als er op ja wordt gedrukt, worden de datums automatisch ingeladen
    If iRet = vbYes Then
      'Call Datum_alfabetiseren
      Call Opmaak 'roept de opmaak functie aan
      Call Naar_Klantgegevens_werkblad
    End If
    'Wanneer er op nee wordt gedrukt, worden de datums niet ingeladen
    If iRet = vbNo Then
    Call Opmaak 'roept de opmaak functie aan
    End If
  Else

  'Wanneer het aantal klanttevredenheidsmetingen van de selectie kleiner is dan 1 (dus er is er geen gevonden)
  'dan wordt een msg box gegeven met het bericht dat er klanttevredenheidsmetingen zijn. Automatisch wordt de
selectie
  'ge-reset
    If IPA.Cells(2, 5) < 1 Then
    MsgBox ("Er bestaat geen klanttevredenheidsmeting die voldoet aan uw selectie criteria: " &
Sheets("IPA").Cells(2, 2) & " & " & Sheets("IPA").Cells(4, 2) & " & " & Sheets("IPA").Cells(5, 2) & " & " &
Sheets("IPA").Cells(6, 2) & "." & vbCrLf & vbCrLf & "Uw selectie zal automatisch worden gereset"), vbCritical,
"Geen meting gevonden"
    Call Naar_Blad3
    End If
'Wanneer er precies één meting is, dan wordt dit aangegeven.
If IPA.Cells(2, 5) = 1 Then
MsgBox ("Er voldoet één meting aan uw selectie criteria"), vbInformation, "Er is één meting gevonden"
Call Opmaak 'roept de opmaak functie aan
End If
End If
'Call Opmaak 'roept de opmaak functie aan
End Sub

Sub keuzes() 'Deze methode vult het derde sheet: blad3 en alfabetiseert om zo de lege cellen weg te halen.
Dim IPA As Worksheet
Dim Blad3 As Worksheet
Dim Klantgegevens As Worksheet
Set IPA = ThisWorkbook.Sheets("IPA")
Set Blad3 = ThisWorkbook.Sheets("Blad3")
Set Klantgegevens = ThisWorkbook.Sheets("Klantgegevens")

'Als er een klant is geselecteerd dan worden de datums hiervan ingevoerd in het derde sheet (Blad3). Deze
worden gebruikt wanneer
'er datums ingevoerd moeten worden.
If IPA.Cells(2, 2) <> "Kies Klant" Then

    For i = 3 To 100
    If Cells(i, 1) = IPA.Cells(2, 2) Then
    Blad3.Cells(i, 2) = Klantgegevens.Cells(i, 2)
    End If
    Next i
    End If
    'als de geselecteerde afdeling gelijk is aan afdeling in lijst, wordt de datum in blad 3 aangevuld
If IPA.Cells(4, 2) <> "Kies Dienst" Then
    For i = 3 To 100
    If Cells(i, 6) = IPA.Cells(4, 2) Then
```

```
    Blad3.Cells(i, 2) = Klantgegevens.Cells(i, 2)
    End If
    Next i
End If

'Zorgt ervoor dat wanneer er meerdere metingen in het geselecteerde Jaar zijn, de verschillende datums in Kies
Datum komen
If IPA.Cells(5, 2) <> "Kies Jaar" Then
    For i = 3 To 100
    If Cells(i, 5) = IPA.Cells(5, 2) Then
    'Voor geselecteerde jaar ook datum kiezen
    Blad3.Cells(i, 2) = Klantgegevens.Cells(i, 2)
    End If
    Next i
End If

'Zorgt ervoor dat wanneer er meerdere metingen in de geselecteerde maand zijn, de verschillende datums in Kies
Datum komen
If IPA.Cells(6, 2) <> "Kies Maand" Then
    For i = 3 To 100
    If Cells(i, 4) = IPA.Cells(6, 2) Then
    'Voor geselecteerde maand ook datum kiezen
    Blad3.Cells(i, 2) = Klantgegevens.Cells(i, 2)
    End If
    Next i
End If

'Zorgt ervoor dat extra opmerkingen gesorteerd worden (lege cellen onder)
    Range("L2:L1018").Select
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Clear
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Add Key:=Range("L2"), _
        SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:=xlSortNormal
    With ActiveWorkbook.Worksheets("Blad3").Sort
        .SetRange Range("L2:L1200")
        .Header = xlNo
        .MatchCase = False
        .Orientation = xlTopToBottom
        .SortMethod = xlPinYin
        .Apply
    End With
    'zorgt dat jaar gesorteerd wordt
    Range("J2:J1018").Select
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Clear
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Add Key:=Range("J2"), _
        SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:=xlSortNormal
    With ActiveWorkbook.Worksheets("Blad3").Sort
        .SetRange Range("J2:J1200")
        .Header = xlNo
        .MatchCase = False
        .Orientation = xlTopToBottom
        .SortMethod = xlPinYin
        .Apply
    End With
    'zorgt dat maand gesorteerd wordt
    Range("I2:I1018").Select
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Clear
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Add Key:=Range("I2"), _
        SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:=xlSortNormal
    With ActiveWorkbook.Worksheets("Blad3").Sort
        .SetRange Range("I2:I1200")
        .Header = xlNo
        .MatchCase = False
        .Orientation = xlTopToBottom
        .SortMethod = xlPinYin
        .Apply
    End With
```

```
    'zorgt ervoor dat datums gesorteerd worden (lege cellen onder)
   Range("B2:B1018").Select
   ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Clear
   ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Add Key:=Range("B2"), _
       SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:=xlSortNormal
   With ActiveWorkbook.Worksheets("Blad3").Sort
       .SetRange Range("B2:B1200")
       .Header = xlNo
       .MatchCase = False
       .Orientation = xlTopToBottom
       .SortMethod = xlPinYin
       .Apply
   End With
Call Opmaak 'roept de opmaak functie aan
End Sub

Sub reset() 'Reset alle waarden terug naar de oorspronkelijke staat
Dim IPA As Worksheet
Dim Blad3 As Worksheet
Set IPA = ThisWorkbook.Sheets("IPA")
Set Blad3 = ThisWorkbook.Sheets("Blad3")
   'Zet de waarden in IPA scherm naar de standaard "Kies" waarden
   'For i = 3 To 1000
   'If Cells(i, 3) <> Cells(100, 100) Then
   'Cells(i, 3).EntireRow.Hidden = False
   IPA.Cells(2, 2) = "Kies Klant"
   IPA.Cells(3, 2) = "Kies Datum"
   IPA.Cells(4, 2) = "Kies Dienst"
   IPA.Cells(5, 2) = "Kies Jaar"
   IPA.Cells(6, 2) = "Kies Maand"
   'Dim Blad3 As Worksheet
   'Set Blad3 = ThisWorkbook.Sheets("Blad3")
   'Blad3.Range("B2:B1124").Select
   'Selection.ClearContents
   'End If
'Next i
MsgBox ("Uw selectie is gereset"), vbInformation, "Selecties gereset"
End Sub

Sub Opmaak() 'Geeft het advies op basis van combinatie belangrijkheid-tevredenheid.
   'Bereik van de rijen met factoren in IPA scherm
   For i = 10 To 14
   'De waardes van factoren worden vergeleken met de gemiddelde waardes. Tekst voor quadrant II
   If Sheets("IPA").Cells(i, 3).Value <= Sheets("IPA").Cells(17, 3).Value And Sheets("IPA").Cells(i, 2).Value >=
Sheets("IPA").Cells(17, 2).Value Then
       Sheets("IPA").Cells(i, 4) = "Investeer in deze factor"
   Else
   'De waardes van factoren worden vergeleken met de gemiddelde waardes. Tekst voor quadrant IV
   If Sheets("IPA").Cells(i, 3).Value >= Sheets("IPA").Cells(17, 3).Value And Sheets("IPA").Cells(i, 2).Value <=
Sheets("IPA").Cells(17, 2).Value Then
       Sheets("IPA").Cells(i, 4) = "Investeer de middelen in andere factoren"
   Else
   'De waardes van factoren worden vergeleken met de gemiddelde waardes. Tekst voor quadrant I
   If Sheets("IPA").Cells(i, 3).Value >= Sheets("IPA").Cells(17, 3).Value And Sheets("IPA").Cells(i, 2).Value >=
Sheets("IPA").Cells(17, 2).Value Then
       Sheets("IPA").Cells(i, 4) = "Ga zo door!"
   Else
   'De waardes van factoren worden vergeleken met de gemiddelde waardes. Tekst voor quadrant III
       Sheets("IPA").Cells(i, 4) = "Doe niets, deze factor heeft een lage prioriteit"
   End If
   End If
   End If
   Next i
End Sub

Sub update() 'zorgt ervoor dat de unieke klantnamen op alfabetische volgorde komen
```

```
'
' update Macro
'
'
    'Roept de functie extra_opmerkingen_IPA_sorteren aan (sorteert opmerkingen, brengt lege cellen omlaag)
    Call Extra_opmerkingen_IPA_sorteren

    Sheets("Blad3").Select
    Range("E2").Select
    Sheets("Klantgegevens").Columns("A:A").AdvancedFilter Action:=xlFilterCopy, _
        CopyToRange:=Range("A1"), Unique:=True

   'Sorteert de namen van klanten
    Range("A2:A1000").Select
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Clear
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Add Key:=Range("A2"), _
        SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:=xlSortNormal
    With ActiveWorkbook.Worksheets("Blad3").Sort
        .SetRange Range("A3:A101")
        .Header = xlGuess
        .MatchCase = False
        .Orientation = xlTopToBottom
        .SortMethod = xlPinYin
        .Apply
    End With
    ' Sheets("IPA").Select
    'Range("B2").Select

    'Kopiert de hele kolom met jaren en zorgt ervoor dat unieke jaren gesorteerd worden
    Sheets("Blad3").Select
    Range("E2").Select
    Sheets("Klantgegevens").Columns("E:E").AdvancedFilter Action:=xlFilterCopy, _
        CopyToRange:=Range("J1"), Unique:=True

    Range("J3:J1000").Select
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Clear
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Add Key:=Range("J3"), _
        SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:=xlSortNormal
    With ActiveWorkbook.Worksheets("Blad3").Sort
        .SetRange Range("J3:J100")
        .Header = xlGuess
        .MatchCase = False
        .Orientation = xlTopToBottom
        .SortMethod = xlPinYin
        .Apply
    End With
     'Sheets("IPA").Select
    'Range("B2").Select

    'Kopieert de hele kolom met maanden en zorgt ervoor dat unieke maanden gesorteerd worden
    Sheets("Blad3").Select
    'Range("E2").Select
    Sheets("Klantgegevens").Columns("D:D").AdvancedFilter Action:=xlFilterCopy, _
        CopyToRange:=Range("I1"), Unique:=True

    Range("I3:I1000").Select
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Clear
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Add Key:=Range("I3"), _
        SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:=xlSortNormal
    With ActiveWorkbook.Worksheets("Blad3").Sort
        .SetRange Range("I3:I100")
        .Header = xlGuess
        .MatchCase = False
        .Orientation = xlTopToBottom
        .SortMethod = xlPinYin
        .Apply
```

```
    End With
     Sheets("IPA").Select
    Range("B2").Select
End Sub


Sub Datum_alfabetiseren() 'alfabetiseert de datums. Hierdoor staan de lege lijsten onderaan en
                         'de juiste datums bovenaan
'
' Datum_alfabetiseren Macro
'
'
    'Range met Datums wordt geselecteerd in blad 3
    Range("B2:B1018").Select
    'Deze range wordt gesorteerd: lege cellen komen onderaan
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Clear
    ActiveWorkbook.Worksheets("Blad3").Sort.SortFields.Add Key:=Range("B2"), _
        SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:=xlSortNormal
    With ActiveWorkbook.Worksheets("Blad3").Sort
        .SetRange Range("B2:B120")
        .Header = xlNo
        .MatchCase = False
        .Orientation = xlTopToBottom
        .SortMethod = xlPinYin
        .Apply

    'IPA sheet en cel B3 (Kies datum) wordt geselecteerd
    'Sheets("IPA").Select
    'Range("B3").Select
    End With
End Sub

Sub Datums_leeghalen() 'verwijdert alle datums uit de lijst zodat er opnieuw gezocht kan worden
                      'op datums
'
' Datums_leeghalen Macro
'
'
    'Blad3 wordt geinitieerd
    Dim Blad3 As Worksheet
    Set Blad3 = ThisWorkbook.Sheets("Blad3")
    'Blad 3 met datum range wordt geselecteerd en verwijderd
    Blad3.Range("B2:B1124").Select
    Selection.ClearContents

    'Sheets("IPA").Select
    'Range("B2").Select
End Sub

Sub rijen_weergeven() 'wanneer er op reset wordt gedrukt wordt deze formule aangeroepen. De rijen
                      'in Klantgegevens sheet wordt allemaal weergegeven (wanneer er geselecteerd wordt, worden
deze regels onzichtbaar)
'
' Rijen_weergeven Macro
'
'
    'Klantgegevens sheet wordt geinitieerd
    Dim Klantgegevens As Worksheet
    Set Klantgegevens = ThisWorkbook.Sheets("Klantgegevens")
    'Klantgegevens sheet wordt geselecteerd met rang c6 t/m 1010
    Sheets("Klantgegevens").Select
    Range("C2:C1010").Select
    'Rijen in selectie worden zichtbaar gemaakt
    Selection.EntireRow.Hidden = False
End Sub
```

```
Sub Naar_Klantgegevens_werkblad() 'Knop Datums invoeren. Zorgt ervoor dat keuzes voor datums
                                    'ingevuld worden. Ook worden de datums ge-alfabetiseerd
'
' Naar_Klantgegevens_werkblad Macro
'
'
    'Verwijderd eerst alle datums voordat er nieuwe toegevoegd worden.
    'Dit voorkomt dat er telkens duplicate datums toegevoegd worden wanneer er op datums toevoegen geklikt
wordt

    Sheets("Blad3").Select

    Call Datums_leeghalen

    'Klantgegevens sheet wordt geselecteerd
    Sheets("Klantgegevens").Select
    'Methode keuzes in blad2 wordt aangeroepen
    Call Blad2.keuzes
    'De datums in blad 3 worden gesorteerd
    Call Datum_alfabetiseren
    'IPA sheets met cel B3 (kies datum) wordt geselecteerd
    Sheets("IPA").Select
    Range("B3").Select
End Sub

Sub Naar_Blad3() 'Knop reset in applicatie. Verwijderd datums, zet klanten op alfabetische volgorde
                'en maakt alle rijen in klantgegevens zichtbaar
'
' Naar_Blad3 Macro
'
'
    'Blad3 wordt geselecteerd
    Sheets("Blad3").Select
    'Datums worden leeggehaald
    Call Datums_leeghalen
    'Extra opmerkingen worden verwijderd
    Call Extra_opmerkingen_verwijderen
    'Methode update wordt aangeroepen
    Call update
    'Advies wordt verwijdert
    Call Advies_leeghalen
    'Methode reset in blad 2 wordt aangeroepen
    Call Blad2.reset
    'De rijen in sheet klantgegevens worden zichtbaar gemaakt zodat er gemakkelijk een nieuwe
klanttevredenheidsmeting toegevoegd kan worden
    Call rijen_weergeven

    'Het IPA blad cel B2 (kies klant) wordt geselecteerd.
    Sheets("IPA").Select
    Range("B2").Select
End Sub

Sub Start() 'Deze methode slaat de gegevens op, roept update aan (alfabetiseert klanten) en gaat
            'vervolgens naar het IPA sheet
'
' Start Macro
'
'
    'Methode opslaan wordt aangeroepen
    Call Opslaan
    'Methode update wordt aangeroepen
    Call update
    'Sheet IPA en cel B2 (kies klant) wordt geselecteerd
    'Sheets("IPA").Select
    'Range("B2").Select
```

```
End Sub

Sub Advies_leeghalen() 'Deze methode wordt aangeroepen wanneer er op reset wordt gedrukt.
                       'Het advies in het "IPA"sheet wordt verwijderd.
'
' Advies_leeghalen Macro
'
'
    'IPA worksheet wordt geinitieerd
    Dim IPA As Worksheet
    Set IPA = ThisWorkbook.Sheets("IPA")
    'Het blok met advies wordt geselecteerd en leeg gemaakt
    Sheets("IPA").Range("D10:H14").Select
    Selection.ClearContents
End Sub

Sub Opslaan() 'Deze macro zorgt ervoor dat de Tool opgeslagen wordt. De tool start automatisch
              'in sheet "Klantgegevens" Door op Opslaan/start te klikken worden de gegevens opgeslagen
              'en kan er gestart worden met de analyse
'
' Opslaan Macro
'
'
    'Het werkboek wordt opgeslagen
    ActiveWorkbook.Save
End Sub

Sub Sluiten() 'Wanneer er op Sluit N-KAT geklikt wordt, wordt er een msgbox getoond
              'met de tekst dat de wijzigingen niet opgeslagen moet worden.
              'Alleen de nieuwe klantgegevens moeten opgeslagen worden, en dit wordt gedaan
              'door op Opslaan / Maak Analyse te klikken in sheet 'klantgegevens'
'
' Sluiten Macro
'
'
    'Wanneer het werkboek gesloten gaat worden, komt deze msgbox naar voren. Deze message box
    'geeft aan dat de wijzigingen niet opgeslagen moeten worden.
    MsgBox ("Sla de wijzigingen in N-KAT.xlsm niet op!"), vbCritical, "Afsluiten"
    'De werkboek wordt gesloten
    ActiveWorkbook.Close

End Sub

Sub Extra_opmerkingen_verwijderen() 'De extra opmerkingen in blad IPA worden verwijderd.
'
' Extra_opmerkingen_verwijderen Macro
'
'
    'Sheet IPA wordt geselecteerd
    Sheets("IPA").Select
    'De juiste opmerkingen range wordt geselecteerd en verwijderd.
    Range("I22:I1100").Select
    Selection.ClearContents
End Sub

Sub Extra_opmerkingen_IPA_sorteren()
'
' Extra_opmerkingen_IPA_sorteren Macro
'
'
    'Blad IPA en range waar de extra opmerkingen zich in bevinden wordt geselecteerd.
    Sheets("IPA").Select
    Range("I22:R1100").Select
    ActiveWorkbook.Worksheets("IPA").Sort.SortFields.Clear
    ActiveWorkbook.Worksheets("IPA").Sort.SortFields.Add Key:=Range("I22"), _
        SortOn:=xlSortOnValues, Order:=xlAscending, DataOption:=xlSortNormal
```

```
    With ActiveWorkbook.Worksheets("IPA").Sort
        .SetRange Range("I22:R1100")
        .Header = xlGuess
        .MatchCase = False
        .Orientation = xlTopToBottom
        .SortMethod = xlPinYin
        .Apply
    End With
    'Sheet IPA en cel B2 (kies klant) wordt geselecteerd
    Sheets("IPA").Select
    Range("B2").Select

End Sub
```

Appendix XVI - Customer satisfaction measurement data

This appendix contains the data from customer satisfaction measurement used for the customer satisfaction analysis of the different services provided by Nibag. The overall satisfaction score per service is also calculated.

–Confidential–